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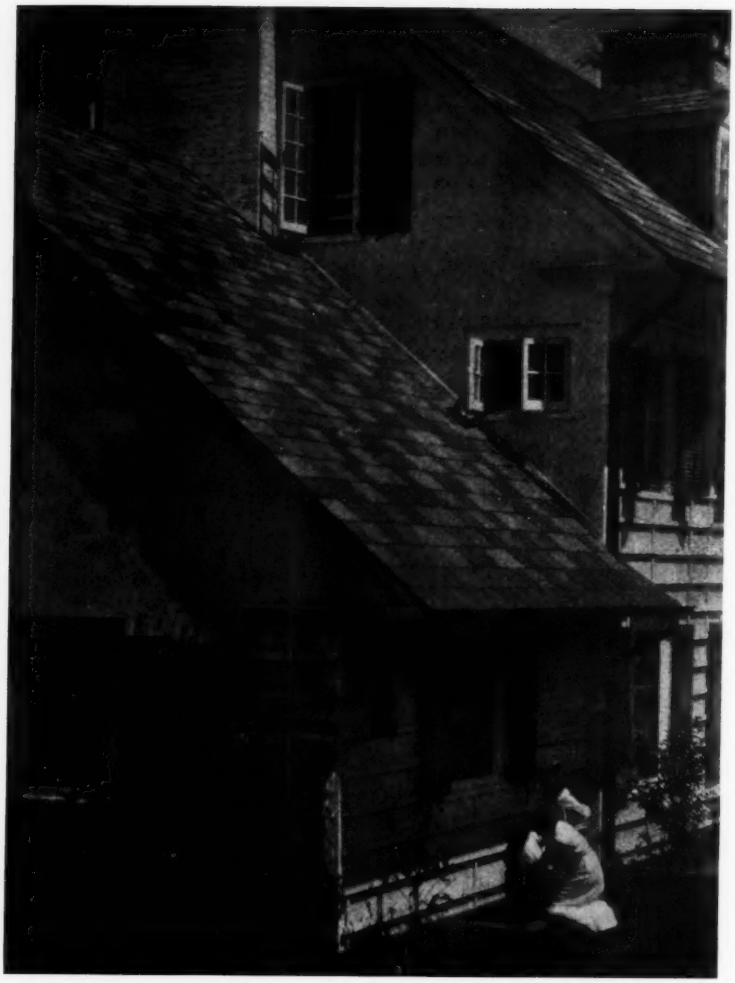

ROOFS
JOHN WALLACE GILLIES

PHOTO-ERA

The American Journal of Photography

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Pictorializing

JOHN WALLACE GILLIES

PICTORIAL photography, to be quite precise, consists in getting the utmost in picture-quality into a photograph by any means whatsoever. It does not follow that pictorializing consists in making a fuzzytype with one of the best soft-focus lenses, for no amount of diffusion will save a picture which, to begin with, lacks in the essentials. A picture can be made with any lens, although it certainly is far easier to make one with a soft-focus lens. The man behind, however, is greater than the lens, no matter how good it may be, and if the desire exists to make a picture the tools will adapt themselves and the pictures will be made somehow.

A short time ago PHOTO-ERA published an article on a method of composition in pattern (May, 1915). As I think it over, the article failed to point out that the desire to create is, after all, the shortest road to pictorial quality. Given the desire, the article on pattern becomes pertinent; without it, the pattern-method of composition is useless. Then it would seem that "pictorializing" must be accomplished as the result of a definite mental point of view, desire or stimulus. The desire, then, is the shortest road. How can it be created and fostered?

Without doubt many beginners say to themselves that it is their earnest desire to make such lovely pictures as we see published in the various photographic magazines. That is the beginning — appreciation; but "the road is long, hard and dusty." Pictures do not come in a day.

Perhaps one of the best methods to gain the feeling for pictorial quality is to use altogether the soft-focus lens, and try in that manner to accomplish a sense of mass, spacing and line-design. It is almost impossible to get an appreciation for these three great essentials by using a corrected lens. The intricate detail is so distracting that a proper sense of the greater elements is not gained. After using the soft-focus lens for a matter of two or three years, it will be found that the feeling of mass, spacing and line has so become a part of the senses that unconsciously one will compose a picture with feeling, using any kind of lens, and giving due regard to these essentials, and no feeling for the minute detail which formerly prevented the proper composition of the picture. It sounds rather peculiar to say that one can use a corrected lens better after a few years' experience with the soft-focus lens; but it is so, especially in this case.

However, even this becomes secondary in the face of the fact that a mental craving is the shortest way to any accomplishment, including, of course, the making of fine pictures. This, as is pointed out, may be assisted by continual use of the soft-focus lens, but it is not the proper way to get there. One must foster the desire as if it were a sick baby, and presently the pictures will begin to show it. Appreciation of beauty, especially in form, must be accomplished before one can consistently make pictures.

It would seem, then, that the production of pictures is dependent upon an education in these matters of form, line and mass, and especially appreciation. That is quite true, and, being true, makes all the books on pictorial photography unnecessary. You cannot be taught; you must learn. No man who is crude and undeveloped in these delicate matters will ever make great pictures consistently. He may manage to make a picture, but there will be no others to follow it. So it would seem that the shortest road to pictures is not what we imagined at first, nor even along the ways of photography, but is the hard high-road of general development of that spark, which exists in every man, of appreciation of finer things.

It seems strange to say that the best way to learn the making of pictures by means of photography is to turn your back deliberately upon photography and go to the study of art in its general forms. However, it is true. Art has

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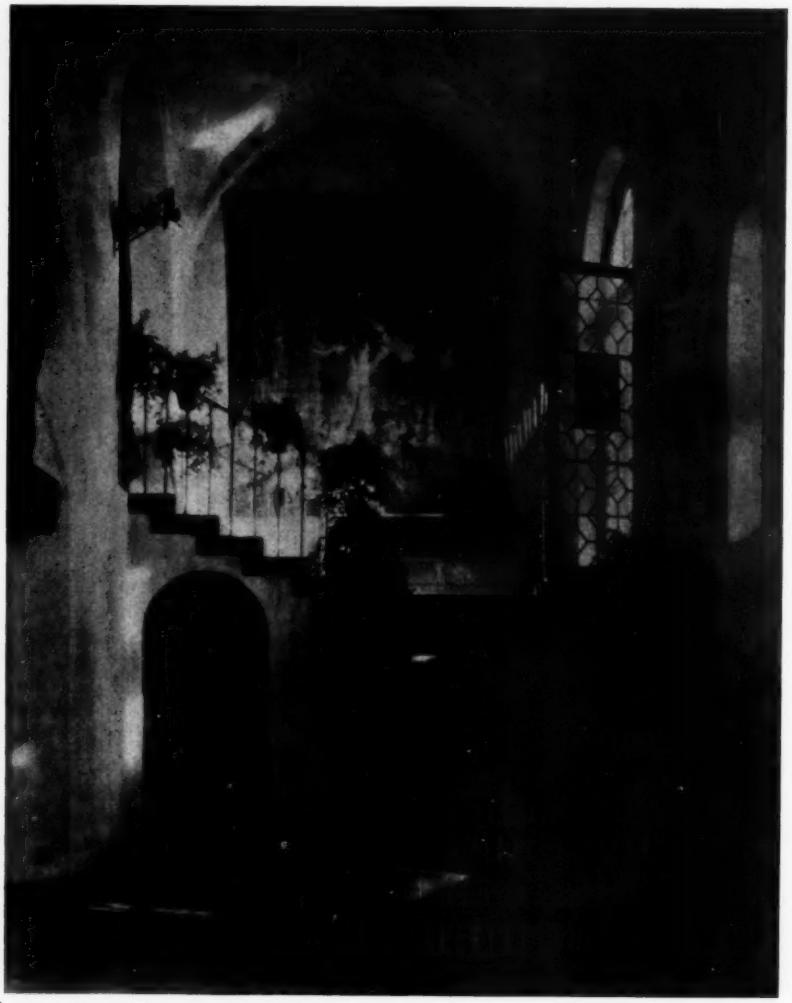
touched photography only in few places. The greater portion of the workers are very busy copying down formulæ from the text-books, and are practising daily with a different developer and a different plate. Why must it always be so? Any developer is good if one becomes used to it; nearly any plate is good; and, I am sure, any paper is good. A good print on Azo is far better than a poor one on platinum; a good negative on a Stanley plate is more useful than a bad one on a Wratten; and any developer is far better than all others if once one knows it.

Why, then, all this pother about formulæ and plates and papers and methods. It takes us nowhere except backward. An attempt to use so many tools in so many different ways results only in confusion and a real knowledge of none. The technicians of photography deserve credit for developing a science which is delightful to get tangled up in, if your interest is pictorial. If there were in existence but one plate, one developer, one kind of paper, one camera and one lens, and the last a soft-focus, there would be three times as many picture-makers.



A STAIRWAY JOHN WALLACE GILLIES

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A STUDY IN DESIGN — JOHN WALLACE GILLIES

Sepia Tones Up to Date

E. J. WALL, F.R.P.S.

THERE are three distinct processes for the production of sepia tones: first, by direct development; secondly, by redevelopment; and thirdly, by the use of the hypo-alum bath, hot or cold as preferred.

With regard to the first, I think we may dismiss it at once as impracticable with development-papers — a term which includes both bromide and gaslight papers. I do not propose to consider printing-out papers, for they seem to be of minor importance in practical work. So far as I know the only method of obtaining sepia tones by direct development with any paper on the market is by the use of sulphinol, a developing-agent of French origin, of which I do not believe there are ten pounds in America. This, however, will give sepia tones direct and not black, because the oxidation-product of the developer is precipitated *in situ* with the silver of the image, and as the color of the oxidation-product is a bright orange, we have: black + orange = sepia.

I am aware that so-called sepia tones are obtainable by variation of the exposure and addition of more bromide to the developer with some papers — but my experience is that if regularity of results is required this method is out of court. It requires fresh developer for every third print. The reason for this is that as most of the development (gaslight) papers are unwashed chloro- or chlorobromide emulsions, the unwashed-out chlorides diffuse into the developer with every print and therefore act as restrainers and alter the color of the resultant print.

The first point to consider is, what is sepia? So far as I can judge there are about a dozen

colors which are called sepia, some tending distinctly towards yellow, others toward blackish orange and still others having a distinct shade of green. Every operator must be his own final court of appeal, and when he strikes a color he likes and calls sepia, then my advice to him is to stick to that particular method of working and get it every time.

The so-called redevelopment process is one of the most unsatisfactory that we have, in my opinion. But before we enter into practical details it would be as well to consider exactly how we obtain sepias. Our primary image is metallic silver — black — in a finely divided state, and in the redevelopment process we convert this into a silver haloide, either the chloride, bromide or iodide, and then convert this into silver sulphide. We might represent the chemical reactions as follows:

(1) $2Ag + 2Hlg = 2AgHlg$

Hlg stands for one of the halogens, bromine, chlorine or iodine.

(2) $2AgHlg + X_2S = Ag_2S + 2XHlg$

in which X stands for a monovalent metal, such as sodium. Now we have no proof that the silver haloid exists as pure silver haloid. The weight of evidence is against it, and we have no proof that the silver sulphide is normal silver sulphide — certainly it is not in the same physical condition as when precipitated in a test-tube.

But we need not enter more deeply into the chemical questions. We have our black silver image, and silver sulphide is a deep blackish brown. If a deep black-brown is distributed in a very fine thin film on white paper it will become a comparatively bright yellow, and if we distribute this yellow on a more or less black image, or precipitate it in a more or less coarse form, then we get sepias.

Many workers prefer the development process, and many have written on the subject, giving us innumerable formulæ for the bleaching- and redevelopment-agents, such as sodium, calcium, potassium, barium and ammonium sulphides. A few — and very few — have recognized that the final tone of a redeveloped print is dependent on the first development. It is immaterial what the first developing-agent is. It is the stage to which primary development is carried that matters. A fully exposed print developed for a short time will never give a satisfactory sepia on redevelopment. One has to hit the correct exposure and develop as long as possible till there is, when the print is as it should be, complete arrestment of the developing-action. I do not purpose to enter into a full discussion of this point, because so far as my experiments and microscopic examination of the images have gone it is dependent on the size of the silver complex forming the photographic image.

Certainly one has to develop much longer than for a black-and-white print; that is to say, at the completion of the primary development the print must be much darker than it should be were it considered only as a black-and-white print. The reason for this is that all the sepias are much more luminous or transparent in the shadows than black images, and a black print which is correct in tonality will when redeveloped appear weak and washy.

Many operators recommend a complete bleaching of the print, but I think that this is a mistake. I have never yet obtained what I call a good sepia when the print has been completely bleached; the colors always tend too much toward a dirty mustard color. The most satisfactory color that I have obtained is by considerable overdevelopment, so that there is absolutely no white visible, then a very slight bleaching, just enough to make the gray tints of the highest lights disappear, a thorough washing and then redeveloping. I thus obtain a bright yellow image superimposed on the primary black image, and the result is a very satisfactory color.

I favor one of the following:

A

Potassium ferricyanide	20 grams
Potassium iodide	5 grams
Water	1,000 ccs.

B

Potassium ferricyanide	25 grams
Sodium phosphate	115 grams
Water	1,000 ccs.

The latter is preferable and was suggested by Greenall, in 1912, but the print must be bleached more than with A.

There has been considerable discussion as to the washing of the prints, and whilst it is possible to place them, with a mere rinse, into the redevelopment bath the color obtained is too warm. On the other hand, too long washing gives flat washed-out looking prints; about ten minutes in running water is enough.

Of all the reagents recommended for the redevelopment bath sodium sulphide is after all the most satisfactory. The bath is made thus:

Sodium sulphide	30 grams
Water	1,000 ccs.

It may be prepared as a stock-solution, but it must be kept in the dark in a stoppered bottle with a well-greased stopper:

Sodium sulphide	330 grams
Sodium sulphite, anhydrous	65 grams
Water	1,000 ccs.

This solution is sensitive to light. For use, mix one part of the above with nine parts of water.

THE HOME-LESSON
JEANNE BENNETT

The hypo-alum bath is far more certain in its action and gives pleasanter tones. There are practically three types of baths: one containing alum, another with aluminum chloride and an acid and the third containing gold. The last is the most satisfactory.

A

Hypo	125 grams
Alum	62.5 grams
Water	1,000 ccs.

Dissolve the hypo and add the alum slowly, with constant stirring, and boil for ten minutes, then cool down and add

Silver nitrate	2 grams
Water	15 ccs.
Salt	2 grams
Water	15 ccs.

Mix these before adding to the above, and finally add

White sugar	50 grams

The temperature of the bath should not exceed 120° F.

B

Hypo	125 grams
Water	1,000 ccs.

Heat, but do not boil, and add

Citric acid (in powder)	40 grams

Allow to cool, and add, previously mixed together:

Silver nitrate	2 grams
Water	15 ccs.
Aluminum chloride	5.5 grams
Water	15 ccs.

The temperature of the bath should not exceed 110° F.

It has been stated that this bath should be filtered when cold, and only the clear portion used, and that then there is no chance of sulphur-deposit on the prints, and that better tones are obtained. On trying this out several times I have found that the clear solution always turns milky on heating — as was to be expected.

C

Hypo	125 grams
Alum	16 grams
Water	1,000 ccs.

Boil for a few minutes and add

Sodium phosphate	16 grams

The bath should be alkaline, and if not enough sodium carbonate should be added to make it distinctly so, and then allow it to cool. Then add, previously mixed:

Silver nitrate	2 grams
Water	15 ccs.
Salt	3 grams
Water	15 ccs.

Stir well and add

Gold chloride	0.26 grams
Water	30 ccs.

The gold solution should be added just before use. The temperature should be from 120 to 125° F. The above quantity will tone 945 square inches of prints.

With both A and B baths it is absolutely essential to hit the right color of the primary image, and for purplish tones this should be a full black; but for real browns of the sepia type then a fuller exposure must be given and more bromide added to the developer, so as to obtain distinct olive tones in the primary image. With bath C there is no need to vary one's ordinary practice, except to develop rather further than usual. Undoubtedly there is some gold toning with this, and one can judge of the final color of the print by looking through it. The use of the gold was first suggested by the Artura Photo-Paper Company, and it is a great improvement. They recommended that the prints should be fixed again after toning for five minutes, and finally washed.

I have carried out a great many experiments with this and other baths recently, and have found that there is great latitude in working with all of them. For instance, with bath C the omission of the subsequent fixing I have not found to give — so far — any ill effects. Prints were placed direct from a plain hypo-bath into this, and some were well washed, and immersed without fixing, into all three baths, and I have been unable to detect any difference in the finished prints. Others were placed direct from an acid fixing-bath into A and B, and here there was a slight loss of intensity — especially in the highlights.

Apparently C is the only bath sensitive to temperature, and a cold bath gives far too purplish a color, whilst too hot a bath gives yellowish sepias. Every operator must determine that particular temperature which gives him the particular tone that he desires, and it is as well to make a series of trials, letting the temperature range from 100 to 125° F., and to keep the results for reference. With the other baths variation of temperature merely means quicker or slower toning; a really cold bath, 65° F., will generally take about sixteen hours, whilst one at 120° only about twenty minutes.

Just one bit of advice — never take a print out of a hot bath and drop it straight into cold water. If you do, in nine cases out of ten you will get blisters. Let the prints cool off first.

Really to exhaust this subject, which, as the Editor says, gives rise to considerable discussion, would absorb rather more space than he would like, with the only result that any inexperienced amateur might repeat every experiment and obtain a result which he might claim was absolutely contradictory to my statements. There

are no standards, and therefore "what is one man's meat is another man's poison." My advice is that every worker should try out the various methods and, having found one that gives him the color that he wants, to stick to that procedure.

There are possibly some variations of the above processes which may be of interest, and these I will outline briefly: first, a direct toning-method in which the print is immersed without any bleaching in a sulphiding bath. After development, fixing and washing, it is immersed in a ten-percent solution of formalin and washed briefly and then immersed in a bath of

Liver of sulphur	7 grams
Ammonia water	q. s.
Water	1,000 ccs.

Enough ammonia should be added to make the solution smell distinctly.

In this the print takes on a rich purple tone, tending to brown, but it is not a sepia, nor have I been able to obtain what I call sepia by this process.

Again, all sorts of tones may be obtained by adding small quantities of metallic salts, such as mercuric and cupric chlorides, to the bleaching-baths and then sulphiding. Again the addition of varying quantities of Schlippe's salt (sodium sulphantimoniate) to the sulphiding-bath will give as great variations of color as even a chameleon could desire; but in all cases one must adhere to one rigid line of work if regularity of tone is required.

By far the most striking variation of the sulphur toning-methods is that suggested by Lumière, in which no change of the primary image is visible in the actual toning-bath, and only makes its appearance during the washing. The disadvantage of the process is that one has to make a preliminary series of tests and records of the times and temperatures to ascertain the color obtainable by any given procedure and then follow this rigidly in practical work:

Hypo	125 grams
Yellow dextrin	125 grams
Hot water	1,000 ccs.

Just before use add to the cold solution, temperature 70° F.:

Hydrochloric acid, strong	50 ccs.

The solution should be opalescent but not milky, and the prints may be immersed in this with but a slight wash after fixing. No change is seen in the color of the print; this is developed only during the subsequent washing, which must last from one and one-half to two hours.

The chemical process involved is probably the formation of colloidal sulphur and also some sulphurous acid, and these attack the silver image. Lumière and Seyewetz give the following equation as explanatory:

$$2Ag + S + H_2O = Ag_2O + H_2S$$
$$Ag_2O + H_2S = Ag_2S + H_2O$$

It is quite possible that silver oxide is formed, but the final product is silver sulphide.

The final color of the print is dependent on the duration of immersion in the bath, and ranges from a warm brownish black to sepia. A difference of five minutes' immersion, or five degrees in temperature, will make considerable difference in the color. Ten minutes at 70° F. will give a warm black, fifteen minutes a warm brown and twenty minutes a warm sepia, and so on. The bath will not keep more than two hours after the acid has been added, but the hypo-dextrin solution may be kept indefinitely. This method is well worth a trial.

Another modification is the single-bath sulphide toner, suggested first by Milton Punnett, in 1907:

Sodium sulphide	50 grams
Ammonium sulphocyanide	100 grams
Ammonia water	q. s.
Water	1,000 ccs.

Without any bleaching, bromide and gaslight prints assume in this a pleasing purple-brown color in about five minutes. Another bath on similar lines, which gives sepia tones, was suggested by G. E. Brown, Editor of *The British Journal of Photography*, in 1910:

Sodium sulphide	80 grams
Potassium ferricyanide	40 grams
Water	1,000 ccs.

Dissolve each salt in half the water, mix and stir till the solution clears, then add

Potassium bromide	20 grams
Water	200 ccs.
Glacial acetic acid	150 ccs.

Stir till the precipitate dissolves. The well washed prints should be immersed for ten to fifteen minutes for a very fine brown tone.

For some special subjects, particularly sketch- and child-portraits, the colors obtained by gold toning of a sulphided print are much admired by some. They are bright red or carmine. This process was first suggested by Wellington & Ward, in 1907:

A

Gold chloride	2 grams
Hot water	1,000 ccs.

B

Ammonium or potassium sulphocyanide	12 grams
Hot water	1,000 ccs.

Add A to B slowly, stirring continuously. The prints must be well washed prior to immersion in this bath. Toning will take about ten minutes,

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and the above quantity of gold will tone about 1,400 square inches of prints.

Personally I prefer the following bath as giving purer colors:

A	
Gold chloride	1 gram
Water	225 ccs.
B	
Thiocarbamide	3.25 grams
Water	225 ccs.
C	
Sulphuric acid	5 ccs.
Water	200 ccs.
For use mix	
A	100 parts
B	100 parts
C	100 parts
Water	1,000 parts

Prints should be left in this till the deepest shadows are toned through. The slightest trace of hypo in the prints will prevent toning.

In the above notes I have endeavored to reduce, within reasonable dimensions, some suggestions for obtaining other than black tones on development papers. To have presented a complete summary of all that has been published on the subject would absorb at least three or four issues of PHOTO-ERA. There remains but to discuss the question of the actual sulphide used for the so-called redevelopment process.

There is no particular advantage in any one salt; possibly ammonium sulphide excels as regards chemical stability, but as a matter of fact there is not one that can be said to be reliable. Sodium sulphide, Na_2S, is the one most used. It is one of the most unstable, unpleasant-to-deal-with salts that we have. It is in such loose chemical combination that one opening of its container-vessel will set in motion the processes of decomposition, which mean the formation of polysulphides and hyposulphites, that act unfavorably on the color of our prints.

Now there are two sodium sulphides on the market, the one the so-called technical, which contains a variable amount of sulphide, plus uncertain quantities of polysulphides, sulphites and hypo(thio)sulphites, and the pure salt, which should contain not less than 97 percent of sulphide. The latter is double the price of the former, but considering the small quantities actually used, price is of no moment. It is advisable therefore to use nothing else but "pure sodium sulphide for analytical work."

If the technical salt is to be used, then it should be dissolved in three times its bulk of water, and allowed to stand for at least a week in the dark, and the clear solution decanted from any precipitate that may form, which will be iron or other metallic sulphides, which cause inferior colors; but the sulphide plus sulphite solution given above is by far the best.

"THE AMERICAN MECCA," MT. VERNON, VA. CARL H. KATTELMANN

The Boy-Scouts

INA L. COOK

Photograph by Charles Z. Vaughan

SLEEP on, O youthful hearts and brave,
  That hear not yet the call to arms,
That reck not yet of war's grim hate
  Or battle's loud alarms.

Sleep on and dream; the watchfires' glow
  Guards still the camp; while far away
Pale mothers kneel by empty beds,
  Stretch empty arms, and pray.

In pageant bright the fighting hosts
  March on to war's vain victories —
A harvest dread of blood and tears
  They reap — dream not of these!

God's grace encircles all the camp;
  His love sings in the coming dawn
The greater victories of peace —
  Sleep on, young hearts, dream on!

SNOW-SHOE TRACKS
D. F. BOYDEN

The Amateur Photographer

SIGISMUND BLUMANN

CONSIDERING the time I give to photography, and the wholehearted interest I take in photographers, the practical man is perhaps right in his estimate when he considers me a weak character. For be it confessed photography and photographers have brought me no money in all these years. But is not this money-gauge a sort of *reductio ad absurdum*? Is the practical man's opinion final? It would seem on closer scrutiny that life itself is not a matter of dollars and cents. In the degree in which all things are made to conform to a material valuation those things lose something — not always, but pretty generally. What is it they lose? Let each reader decide for himself.

What is said herein of the amateur photographer is true of the amateur in any of the arts. For fear I may overlook some of the good truths which justify others to do for love of the doing, without hope of profit, let me speak of the amateur photographer as one person — myself; not egotistically as worth the space, but as one evidence for the defense.

In me exists a yearning to make pictures. I cannot paint nor even draw. I love nature in "all her visible forms." The made picture pleases but cannot satisfy me. I feel an impulse to express emotions in pictures — emotions of my own in pictures made by myself. Since it is not given me to use the pencil or the brush, I use the camera. Nimrod had his way of seeking the remoter landscapes, but I abhor the gun. Walton loved the river's brim, but my taste is not for fishes, but for the sight of the river itself, and that alone. Let the cook serve the fish. Without injuring any of God's creatures I tramp the hills and explore the woods, quietly and peaceably, with a burden of some ten or twelve pounds of camera, plates and tripod. If it be on a Sunday then the blue dome of heaven itself is my temple, and I worship no less reverently in that the breeze delivers the sermon and the birds are my choir. In big silences I enjoy and expose my plates, eat my luncheon under a shady tree and with a glorious fatigue tramp home again, my game-bag filled, and happy in my catch, even though it be unprofitable.

But the darkroom has its charms, too. It is a part of home. Outside the red window I can hear my youngsters playing as I watch the black come out on the creamy plates. One of the kiddies falls, and I cover the tray and am out to offer help and consolation. When the good wife calls I can hear her, and if it be to dinner, I leave the negatives for the hour in the hypo and am ready to do justice to a home-cooked meal.

Eventually prints are made, and my friends are given, or say they are given, pleasure with the gift of pictures. The pleasure is none the less to them in that these pictures cost them nothing, and the expense to me has been repaid by the pleasure gained and the pleasure I like to believe has been given them.

It is all so peaceable, so peaceful. But with it there has come and grown an ambition to make works of art. I have studied the masters; have striven to make works of art. I feel that I have been improved. I try to improve myself that my work may be bettered. After a time there come associations with other kindred spirits who love nature, art, quiet, home and all the other things I love. Friendships are formed that count. How shall I enter these items in the account-book of my life? Shall I try to put a money-value on my highest enjoyments? Men, practical men of business and affairs, call me visionary, impractical and other things; but in the days of many years spent, when I might spare them from the necessary grubbing for a livelihood, in the open under the blue sky, I have never seen the dollar-sign appear in the firmament, nor heard the jingle of coin in the wildwood.

A man must eat and should work. I work not only that I may eat, but that those whom I love may eat. And they are well fed. My work is as well done as I can do it; and then what? Must my pastimes remain the most desultory and aimless of my efforts to be conceded as being pastimes? May I not make pictures and give them away in the hours through which the practical man gets his recreation at country-clubs? May I not spend on lenses and plates and paper a tithe of what he puts into hot birds and cold bottles? In justice to diverse views let us say that tastes differ. One man is very practical all day and spends his nights at tangoing or the poker-table; another is not the less practical who does his day's work conscientiously, and when leisure offers the opportunity takes his camera and goes afield, or locks himself in a darkroom to perpetuate his pleasure in a tangible form for the pleasure of others. The amateur photographer harms no one, gets and gives pleasure generously. He will usually be found a gentle person who loves, and is beloved by, his family. Is he so impractical after all?

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Printing-In Clouds from Separate Negatives

WILLIAM S. DAVIS

UNDOUBTEDLY the ideal method for the pictorialist is to obtain suitable clouds in just the right location at the time the landscape or other outdoor-composition is photographed (provided, of course, the subject needs them); but the fact of the matter is that the camerist cannot always be on hand to take advantage of such perfect conditions, consequently in many cases the only way to supply the clouds is by recourse to "printing-in" from a separate negative. Although entailing more labor, this is not always a disadvantage in other respects, however, as the worker of trained taste can, given a fair stock of cloud-negatives, select what will exactly complete the lines of the composition or aid the impression it is desired to convey, which is better than taking any sort of clouds which may happen to fill the sky when the foreground is photographed.

FIG. 1. A SKY NEEDED

Naturally, the worker who wishes to take advantage of the pictorial possibilities of double-printing must possess sufficient knowledge to select an appropriate combination, and also have a varied collection of cloud-negatives from which to choose. A large number is not absolutely necessary, however, as a dozen or two of the right kind will meet a wide range of requirements, so we will first consider the most useful types and how to photograph them.

The many variations of cumulous and stratus clouds are more often of value for pictorial purposes than others, both on account of their contours and the fact that they are most frequently seen. This latter point is worth noting, for however interesting it may be to record rare and strikingly odd specimens, they are not well suited to combine with an interesting foreground, on account of producing a division of interest, which is always fatal to pictorial unity.

As suggested by the name, cumulus includes practically all the rounded cloud-masses; but these are classified in sub-divisions, such as alto- and cirro-cumulus, often referred to as a "mackerel sky;" the castallato, or "double headers," which tower upward in white masses on quiet, warm days; cumulo-nimbus, a form of rain-cloud, etc. In clear, windy weather the clouds are frequently broken up into detached masses, which are then designated as fracto-cumulus, or whatever variety the clouds happen to be. Clouds of the stratus type spread out in horizontal streaks or layers, and these are very often seen in combination with other forms, such as a cumulus upon a stratus base, this formation most commonly taking place when the atmosphere is full of moisture and variable air-currents.

In making useful sets of negatives one should aim to record the more characteristic formations under different lightings; i.e., with the sun falling upon the clouds from one side at different times of the day, with the sun behind during the forenoon and afternoon hours, and lastly good sunsets. The horizon-line should be just included in the negative, and free of any near obstruction, because when one wishes to print clouds into an open view with flat sky-line a true effect cannot be obtained by using clouds seen only at a higher elevation.

Orthochromatic plates or films should be employed, and a ray-filter of medium depth (say about 4-time) included in the outfit. It is also a good plan to use some sort of hood around the

lens to keep off extraneous reflected light. Well-defined gray clouds, or light clouds seen against the sun, can, if desired, be rendered very well without using a filter. The exposures under such conditions would range from about $\frac{1}{25}$ to $\frac{1}{100}$ second with stop F/11 (U. S. 8), according to the time of day and year. All white clouds upon a background of blue sky, delicate filmy types, and strongly colored sunsets, need a ray-filter over the lens to produce satisfactory results. The average exposures at F/11 would then be from $\frac{1}{2}$ to $\frac{1}{10}$ second on such orthochromatic plates as those listed in Class 1 of the PHOTO-ERA Exposure-Guide. Using a lens working at F/8, or faster, ray-filter snapshots of $\frac{1}{25}$ second can readily be made in summer. It is of course understood that the exposures mentioned refer to clouds alone, or with open water, for in most cases they would be insufficient for average landscapes with medium-dark foregrounds.

FIG. 2. UNSUITABLE CLOUDS

When making cloud-negatives the following details should be recorded — time of year, hour of day, direction of wind, direction in which the lens is pointed. While all these details may not be important in every case, one never can tell when they will be needed for reference; and for the same reason it is advisable to enter such data with landscapes which are likely to be used for combination-printing.

In developing clouds one should aim to obtain negatives of medium printing-quality, rather thin and soft, but not flat. Any tendency toward flatness, which might occur when dealing with very thin delicate forms, can be overcome by adding an extra amount of bromide to the developer and allowing the latter to act longer than the normal time.

While nothing will take the place of training and taste as a safeguard from bad combinations, the data mentioned above will provide a check upon such inconsistencies as the introduction of clouds lighted from the opposite side as the landscape, or, in a marine, having clouds driven along by a wind directly contrary to that which is propelling some sailing-craft! Sometimes such points can be corrected, however, by reversing the cloud-negative and printing through the back, for any slight diffusion which would result in the case of a glass plate would not prove detrimental.

Another feature to be considered is the use of morning-clouds with afternoon-landscapes, and vice versa, as certain changes occur in the formation of some clouds at different times of the day; consequently, if the subject clearly expresses the feeling of

FIG. 3. A GRAY DAY IN THE PASTURE

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FIG. 4. ANOTHER SKY NEEDED

a certain time of day, any clouds used should be those taken at nearly the same hour. There are views, however, which in a photograph do not give one a definite impression of this kind, so with such it is permissible to use any clouds pictorially suitable which are lighted from a similar angle. For example, suppose a bit of landscape is taken at nine o'clock in the morning looking north; one might select clouds taken looking in the same direction at three in the afternoon, and by printing them reversed obtain the same lighting as that of the landscape. Naturally, there would be no object in doing anything like this if a suitable cloud-negative were available taken at the same time of day as the landscape; but with only a limited stock to select from such is not always the case.

When choosing clouds to fit a particular subject one must be guided both by the character of the view and the lines of the composition. A scene full of interest in itself, but showing a patch of blank, white sky out of tone with the rest, needs only a suggestion of delicate clouds to bring this portion into harmony without diverting interest from the principal part of the picture. On the other hand, an open landscape consisting of a few broad, strong tones with but little detail in the foreground to hold the eye will usually require a sky of sufficient strength and beauty to command a fair share of attention, and so complete the composition. The lines of the clouds, whether the sweeping curves of cumulous forms or horizontal streaks of stratus and cirrus, are often a valuable aid in restoring balance to a one-sided foreground-composition.

Just to indicate the need of careful selection I am showing the misfit combination of a cloud-formation that is good in itself. Fig. 1 shows a view that is certainly in need of a suitable sky, but in Fig. 2 the result is very unsatisfactory because the style of clouds chosen is too assertive, thus preventing concentration of interest upon nearer parts; also the contours of the clouds fail to help balance the rest, and lastly, to make matters worse, are printed too deep for this subject. Fig. 3, however, shows a very much better result, obtained by selecting soft, simple clouds which fill the space allotted to them in an unobtrusive manner, aiding the effect of repose. To prove, though, that the sky used in Fig. 2 is

FIG. 5. THE SKY IN FIG. 2 USED PROPERLY

good in the right place, I am presenting it again in Fig. 5, where it is quite in keeping with the subject. The reason for this is, in a measure, explained by Fig. 4, which shows how much an open landscape of this sort containing a wide expanse of sky depends upon a bold, effective cloud-formation to give it pictorial quality.

In all cases one must preserve an impression of truthful tonality between sky and foreground, which is a matter of judgment as to the relative depth of printing allowed. A surprising variety of effects is possible by altering the time of printing, but the actual depth to which the clouds are printed naturally depends upon whether the rest of the picture is light or dark in tone. When in doubt it is better to keep the clouds a bit light, as such a defect is less objectionable than having them overdone.

The general pictorial requirements of the subject having been indicated, the next question to be considered is how best to print-in the clouds without showing where they meet the foreground-portion. As several methods are available I will describe the most practical ones, and leave it to the reader to select whichever seems best suited to the particular work in hand.

In the first place, the sky-portion of the landscape must be kept virtually white, otherwise it is obvious that light clouds which are printed in later will appear dull and flat in the highlights; consequently, if the sky of the negative is not sufficiently opaque to print as a blank it must either be shaded by a piece of card cut roughly to the shape of the sky-line, moving it slightly during the printing to avoid showing a hard line, or this portion of the negative blocked out in some manner. For most subjects shading is sufficient, as any slight tint which may show near the horizon as a result of this vignetting is often rather useful, because it permits the clouds to blend in a similar manner, thus preventing the appearance of a white line of demarcation. When, however, a subject has a very broken sky-line, with sharply defined edges, such as occurs with architectural details, shipping and such like, recourse is usually had to "stopping-out" with an opaque oil or watercolor, applied with a soft brush. Some prefer to outline the details with a fine pen and India-ink, and then block out the rest with regular photographic opaque, or red watercolor. Another way is to make a print on either printing-out or developing-paper without fixing, cut apart very carefully along the sky-line and allow to blacken in the light, thus making an opaque mask. The upper half is then attached to the negative with a few dabs of paste, either upon the film side, or back, as preferred.

When a visible printing-process is selected, the subject is printed in the usual way; then the cloud-negative is substituted (using a size larger printing-frame, fitted with plain glass to permit of moving the negative about) and the print adjusted, the latter being done by holding the whole to the light and looking through the paper before clamping in place. If the sky-line is simple all that need be done while the sky is printing will be to shade the printed landscape with a piece of cardboard, the desired control being obtained by moving this during the process. Should a white or very light object cut into the sky greater protection is necessary to prevent this part darkening while the clouds are printed around it; so in such a case a mask is made by cutting apart a proof, as previously described, using only the lower portion while the sky is being printed. Such a mask is illustrated in Fig. 7. This is best held in position by slightly touching the bottom or extreme edges with paste, and placing in correct position upon the print before adjusting the latter on the cloud-negative, although if greater softness along the edges is desired it can be produced by attaching the mask to the back of the cloud-negative or a piece of glass; only it is more trouble then to secure correct registration.

Where prints are made on bromide or gaslight papers the methods just described are not so satisfactory, because no visible image appears during exposure, thus making it difficult to join sky and foreground without showing either a light or dark line where the parts come together; but this is overcome by a method I worked out several years ago and found satisfactory. It is as follows:

Make the landscape print as usual, develop and wash rapidly in three or four changes of water to stop the action of the developer, but *do not fix*. Now place face down on a piece of thin, well-cleaned glass, and apply a squeegee to remove the surplus water and *all air-bells*. Using this glass as a separator, the moist print is located in the desired position over the cloud-negative, and the second exposure made. This will be about twice the normal for dry paper, as a wet emulsion is not so sensitive. Except in special cases, mentioned later, it is not essential to protect the foreground while printing the sky. After stripping from the glass the clouds are developed *locally* by applying the solution with a tuft of absorbent cotton. This was the general method followed in making prints shown in Figs. 3 and 5, which are on bromide paper. Should a mask be necessary to protect a light building, as in Fig. 6, owing to the difficulty of developing the clouds around the tower locally without encroaching upon the light portion with bad results, the first exposure is developed only until the image is

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FIG. 6. STILL ANOTHER SKY NEEDED

just visible, washed, and after placing face down on the glass as before described, the mask (Fig. 7) is stuck in the correct position on the opposite side of the glass, and the clouds printed in; then, instead of developing the sky locally, the entire print is immersed, thus allowing the foreground to finish developing together with the sky. Should the latter develop slowly on account of the foreground having got a start, the print may be washed and the clouds finished by local development with satisfactory effect. Fig. 8 shows a print made in this way on Cyko paper.

FIG. 7. THE MASK FOR CLOUD-PRINTING

To ensure a uniform tone or color upon developing-papers of any kind, some care is necessary to time the exposure of the clouds so that they will develop to the desired depth in approximately the same time as the landscape. A little practice soon enables one to judge this factor quite accurately; but if greater exactness is considered necessary a small strip of wet paper can be exposed first as a test.

The same methods of exposing and developing each part separately apply equally well to the making of enlargements, only no separating-glass is needed to protect the cloud-negative.

So far we have considered only the addition of clouds on each finished print, but when a number of duplicates is to be made it is much better to prepare a new negative of the combination, and thus eliminate all further labor attendant upon double printing. One way to accomplish this is to make a print exactly as wanted upon smooth-surface paper, either by contact or enlargement, and then copy with the camera. If done with care this generally answers the purpose, especially when the new negative is used only for contact-printing or small enlargements; but if subjected to considerable magnification there is likely to be some loss of quality, owing to the grain of the original print becoming visible. This, of course, is not so likely to occur if the negative was copied from a fair-sized enlargement; still it is desirable, when the very finest technical quality is needed, to make a combination transparency and obtain a new negative from this.

The preparation of such a transparency is not so difficult, indeed hardly as much trouble in some ways as making a print, because the sky and foreground are each made on separate plates, thus allowing exact register to be secured at leisure. For this work it is best to use regular lantern-slide or transparency plates, although almost any very slow ordinary plate will do if developed in a restrained developer and the exposure is carefully timed. If a worker is interested in slide-making the subject-matter can be kept within standard size, so the transparency becomes available for use in the lantern after the new negative is obtained. These plates, both in

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exposure and development, are handled practically the same as bromide papers, and the positives made either by contact, in a copying-camera, or with a focusing-enlarger, which allows the image to be made larger or smaller than the original. An improvised kit for holding the plates is easily evolved, therefore I will not take up further space with these details, but continue with the subject in hand.

Print the landscape first, and after developing and fixing remove any grayness in the sky by local application of a hypo and ferricyanide reducer, applied with a swab of cotton or camel-hair quill-pencil. After washing and drying place in contact with a fresh plate — film to film, held together with a bit of gummed binding. The clouds are now located, keeping the landscape-positive between the negative and unexposed plate. After exposure the latter is separated from the first positive, developed and fixed, when upon examination a negative image of the landscape will be found superimposed on the clouds. All that now remains is to surface dry the plate with cotton or blotting-paper and apply the reducer to every part within the outlines until all traces of an image below the sky-line are removed — then wash and dry. Upon bringing the positives together again the parts are registered and bound together permanently. Substituting this positive in place of a negative in an enlarger, and a slow- or medium-speed ordinary plate of the desired size where the bromide paper is usually fastened, a new negative is obtained.

FIG. 8. THE LIFE-SAVING STATION

In conclusion I can say only that while some may consider the printing-in of clouds too much trouble, the serious worker will not stop on account of a little extra time and labor if the result justifies the expenditure, and as a matter of fact the technical work involved is not really so complicated; but I thought it best to describe every detail clearly in order to avoid possible confusion or uncertainty by inexperienced workers regarding any stage of the process.

GOOD technique is of the greatest importance; but undue attention to technique will result in a loss of imaginative quality, and this is far more important than technical excellence.— PAUL LEWIS ANDERSON, in *Pictorial Landscape-Photography*.

The Use of Bromide

THERE is a growing tendency to discourage the use of potassium bromide in the developer, states *The British Journal of Photography*, and so far as this prevents new workers falling into the idea that more pyro and bromide will remedy matters when bad overexposure shows itself, well and good. But there is little doubt that bromide does increase the contrast of the negative; and further, that with plates or developers which tend to give foggy results, it prevents fog-veil. Brighter prints on bromide paper may be obtained with potassium bromide in the developer, although as commonly developed to the limit its effect is less to be expected than in negative-work. With prolonged development its effect is negligible, but development is usually stopped long before completion, the usual three or four minutes being only a part of the time during which the image would go on gaining density. It is probable that many workers who get clean negatives "without bromide" are really employing it, the manufacturer having quite unknown to him added a small proportion to the emulsion.

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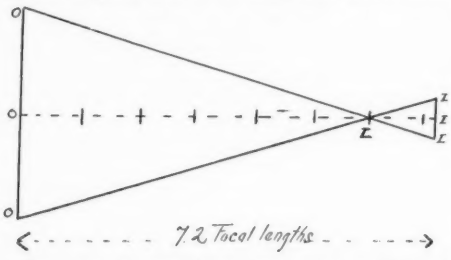
The Effect of Bellows-Extension on Exposure

PHILIP CONKLIN

TO the landscapist this article will be of slight interest; the portraitist will find one paragraph applicable to his work, but the man interested in enlarging and in making large copies, if he apply the table, will, I think, find it very useful. By large copies, I mean their relation to the original. A 14 x 17 copy from a 14 x 17 original requires the same exposure as a cabinet from a cabinet, because the bellows-extension is the same in each case.

It will be necessary to determine the focal length of the lens to be used — a matter of very few minutes' work. Draw up a one-inch image of a five-inch strip of paper; measure from the strip to the ground-glass and divide by 7.2. The quotient will be the focal length of the lens, and the nodal point will be six times this ascertained



Note that while 000 is five times as long as III, and that the former is five times as far from the nodal point, the greater distance is not five focal lengths, but six. In all cases there is one focal length to be added to the greater distance.

distance from the strip. It should be noted on the barrel, and will probably coincide with the diaphragm-plane. From this point all measurements are to be made. Inasmuch as there are various other more complicated ways to determine focal length, I will interpolate the explanation of the method suggested. An understanding of it may help with the use of the table. It has to do with the conjugate foci. One is the distance from original to lens, and will be referred to as OL; the other is the distance from the lens to the image, LI. These distances bear the same relation to each other that the original bears to its image. In the case of enlargements LI is the greater, and vice versa with reductions. To determine the greater distance, it is necessary to know only how much greater the image is than the original (in length — not area), and to add "one" and think of the sum as so many focal lengths. In the method under consideration we have arbitrarily chosen this relation as 5:1. Adding five and one gives us six (focal lengths) as the greater of the two foci. As the lesser distance must be one-fifth of that, it becomes $\frac{1}{5}$ of 6, or 1.2. Adding these we get for the sum of the conjugate foci 7.2 focal lengths. Knowing the distance in feet and inches, it remains only to divide by 7.2, see diagram.

It is pretty generally understood that if a lens be focused on infinity the bellows-extension divided by the (optical) diameter of the diaphragm will give the F-value. (The distance from ground-glass to nodal point will be the focal length.) But if the same diaphragm be used to make a picture the same size as the original (a ratio of 1: 1), the bellows will be extended just twice as far, and the true value of the opening must be read as the second smaller F-number. This means an exposure four times as great. In photographing distant objects the variations in extension are so slight as to be negligible; but as we approach a ratio of about 1: 6 (which is somewhere near a cabinet head proportion) it is a decided factor, so that using a one-inch cabinet head as a unit the exposures would vary as follows:

Head in inches	*Relative exposure*
1.	1.
1.5	1.1
2.	1.2
2.5	1.3
3.	1.4
3.5	1.5
4.	1.65

If we go on to the extreme condition of an enlargement of five diameters, the efficiency of the same diaphragm is reduced to $\frac{1}{24}$ of that which it had when focused on infinity.

The accompanying table is based on the ratio of 1: 1 as a unit, and gives exposure-factors for other ratios by quarter sizes. Column 1 designates the size of the image as compared with the original. Column 2 is filled out in terms of focal lengths, and must be completed by multiplying its various numbers by the focal length in inches of the lens to be used, and substituting these products in their respective places. It will then indicate the extension of the bellows LI in inches. After these substitutions are made, each can be divided by its neighbor in Column 1, and the

quotients put in their proper places in Column 3. These will be the distances from lens to original. The sum of Columns 2 and 3 will be of great help in deciding whether or not an enlarging-apparatus can be installed in a restricted space. If more than one lens is to be used, Columns 2A, 2B, 3A, 3B, etc., can be made for each lens, and their focus placed at the top.

As the unit is a ratio of one to one, to keep tabs, one standard negative should be kept for purposes of comparison. Find how long an exposure is necessary to make a print from this standard through the lens same size as the negative, and mark this time on the negative. Compare any other negative to be enlarged, with the standard, and mark it as to its density compared with the standard.

When the enlargement is focused, the distance LI is taken. The number most nearly agreeing with it in Column 2 (a variation of an inch or two, depending on the lens, need not be considered) is found, and opposite, in Column 4, is the factor for correct exposure.

To facilitate the measuring, a tape can be fastened with its zero mark on the easel and allowed to run over a smooth roller or nail fixed to the camera in the plane of the nodal point, a weight on the pendant part keeping it taut. The readings are taken where the tape crosses the roller.

If an artificial light without condensors is the illuminant (or if several thicknesses of diffusing-material are used before and behind the condensors), this method absolutely cuts out all uncertain factors except the negative.

The table is also very useful under the skylight for making enlarged or slightly reduced copies. I use it almost daily.

It is understood that by bellows-extension is meant distance from lens to image. Of course in the case where a darkroom is used for enlargements, the bellows is on the other side of the lens.

Degree of Enlargement or Reduction	Distance L to I (in focal lengths)	Distance L to O (in inches)	Relative Exposure
1	2	3	4
.2	1.2		.4
.4	1.4		.5
.6	1.6		.6
.8	1.8		.8
1.00	2.00		1.0
1.25	2.25		1.2
1.50	2.50		1.5
1.75	2.75		2.0
2.00	3.00		2.3
2.25	3.25		2.5
2.50	3.50		3.0
2.75	3.75		3.5
3.00	4.00		4.0
3.25	4.25		4.5
3.50	4.50		5.0
3.75	4.75		5.5
4.00	5.00		6.0

THROUGH THE ARCHWAY — EARLY MORNING C. HOWARD SCHOTOFER

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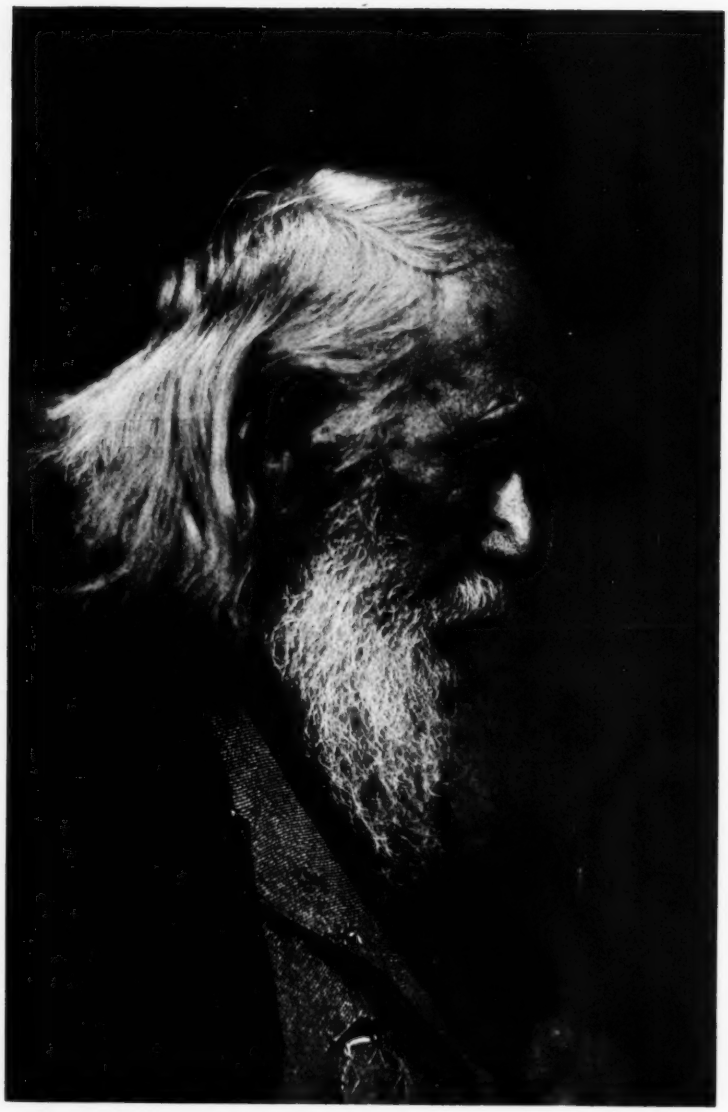

A VETERAN
D. D. SPELLMAN

Speed- and Exposure-Tables for a 3A Kodak

FRANKLIN H. SMITH

IN photographing an object in motion its image on the negative may be to a certain degree out of focus and at the same time yield a satisfactory picture. Just how much it may be out of focus is sometimes a matter of considerable importance in high-speed work because the correct timing of the plate or film to avoid extreme underexposure is quite as essential as absence of blur. A ready means to determine the limits and possibilities of this sort of work will be found in the accompanying tables, which have been worked out for a 3A Kodak fitted with a 6-inch anastigmat lens working at F/6.3, according to the principles stated in Plates I and II.

For example, referring to Plate III, if the focusing-scale is set for 25 feet any object traveling 3 miles per hour across the field of the lens will not show movement on the plate of more than $\frac{1}{100}$ inch if it is within 22 to 37 feet. This movement on the plate is due partly to being out of focus and partly to its actual movement, the total being $\frac{1}{100}$ inch on the plate. To get this

MIN. & MAX. DISTANCE FOR MOVING OBJECTS

B = allowable blurring. (= .01 etc.)
t = time of exposure in seconds
v = velocity of object moving across field, in inches per second.
F = focal length of lens
a = distance from lens to object
S = distance set on focusing scale
K = greatest distance of moving object
N = least " " " "

$$B = \frac{t v F}{a} \qquad N = \frac{S(t v F f + F^2)}{R S f + F^2} \quad (1)$$

$$E = \frac{F^2(S-N)}{S f N}$$

$$R = B + E \qquad K = \frac{S(t v F f - F^2)}{Q S f - F^2} \quad (3)$$

$$J = \frac{F^2(K-S)}{S f K}$$

$$Q = B + J$$

ALL DIMENSIONS IN INCHES

Exceptions:-

(a) If "N" comes greater than "S" the condition is impossible on the "N" side of the plane represented by "S" (see 6")

(b) If "N" comes greater than 1200" when "S" = 1200" then "N" = $\frac{tvF}{B}$ since everything beyond 1200" (100 ft.) is perfectly sharp, when focusing scale is set to 100 ft.

(c) If "K" comes less than "S" the condition is impossible on the "K" side of the plane represented by "S"

SEE NEXT PAGE (sheet, sheet #1.

PLATE I

MIN. & MAX. DIST. FOR MOV. OBJS. CONT.

(d) when "K" results in a negative quantity K = ∞ (see 2")

(e) If depth of focus is to ∞ when focusing scale is set to less than 100 ft - find "p" by formula

$$p = \frac{F^2(1200-S)}{1200 S f} + \frac{t v F}{1200}$$

in which "p" = blur + circle of diffusion for this condition of depth of focus. If "p" is less than "Q" the max. dist. for moving objects is also ∞ (If "p" is greater than "Q" the condition is impossible). In the above equation $\frac{F^2(1200-S)}{1200 S f}$ is the max. circle of diffusion for objects in a plane 100 ft. from the lens and beyond. (f) When the focusing scale is set to 100 ft. everything beyond is perfectly sharp, and if "N" is obtained by formula "1" the max. dist. for moving objects is obtained by $K = \frac{tvF}{B}$ (However if "K" is less than 1200" by this formula the max. dist. for moving objects is ∞). If "N" is obtained by formula given in (a) the max. dist. for moving objects is ∞.

All the above on min. & max. dist. for moving objects is original with Franklin H. Smith

2 sheets, sheet #2

PLATE II

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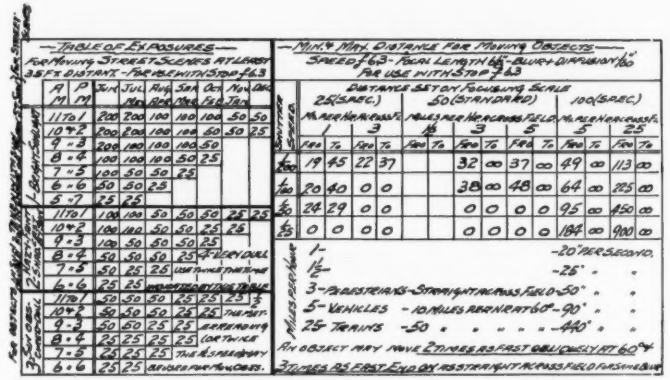

PLATE III

SPEED RATIOS

U.S.	f.	RATIOS								
2.5	6.3	1	3/5.6	5/16.3	3/32	16	.08	.04	.02	
4	8	1.6	1	1/2	1/4	1/8	1/16	1/32		
8	11.3	3.2	2	1	1/2	1/4	1/8	1/16		
16	16	6.4	4	2	1	1/2	1/4	1/8		
32	22.6	12.8	8	4	2	1	1/2	1/4		
64	32	25.6	16	8	4	2	1	1/2		
128	45.2	51.2	32	16	8	4	2	1		

PLATE IV

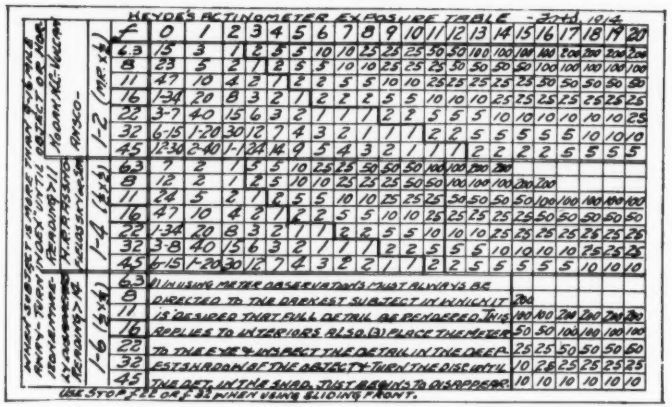

PLATE V

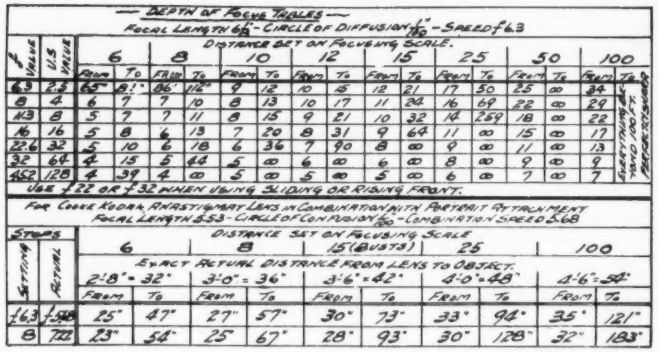

PLATE VI

range of 22 to 37 feet one must use a shutter-speed of $\frac{1}{200}$ second. As indicated by the ciphers, $\frac{1}{100}$ second gives no results, for the movement is too great, even if exactly 25 feet from the lens.

The next thing desirable to know is if a speed of $\frac{1}{200}$ second can be used? Assume that it is January, bright light at noon. The table at the left of Plate III shows that $\frac{1}{50}$ second is required for correct timing, therefore it is useless to attempt to get an object moving 3 miles per hour at 25 feet distance, for it would be underexposed and the plate or film wasted. It may be done in May, June and July, however, as shown by the table. All other necessary data for street-scenes will be found in the two tables of Plate III.

The table of speed-ratios, Plate IV, is very useful when reading photographic articles, as one can readily convert the data into stops one is familiar with through frequent use. For instance, if an exposure-time is given in terms of U. S. 32 it may be converted readily to terms of F/16 by merely glancing at the table.

The table on Plate V is made for quick and easy use of the Heyde Actinometer with the shutter on the 3A Kodak, or any other shutter having the same speeds, the speeds on the back of the actinometer not being in terms of the speeds of this shutter. In every case the nearest shutter-speed has been figured and tabulated so that upon reading off the number by meter one can refer to the table to find the nearest shutter-speed instead of attempting to use the values given on the back of the meter. This does away with all calculation whatever in connection with the exposure. It will be noticed that the three parts of the table cover virtually all conditions, as noted at the left, the numbers to the left of the heavy zigzag line being whole seconds and to the right fractions of a second.

The tables on Plate VI were calculated by means of the formulæ on Plate VII. The bottom table is particularly useful for close work with a supplementary portrait-lens. Plate VII is of frequent service, for by its use one can often decide about how to set up the camera for any particular subject before starting the actual work. It will be noticed that various notes on easily forgotten points are appended to several of the plates where they will be seen as reminders.

While, as already stated, these tables have been worked out for a 3A Kodak fitted with a 6-inch anastigmat lens working at F/6.3, they have a much broader application.

(a) The table of speed-ratios may be used for any camera of any make or size.

(b) The depth of focus tables may be used for any camera, regardless of size or make, equipped with a lens the equivalent focus of which is 6 inches. Most cameras the size of the 3A have a lens with a focal length of 6 to 7 inches, therefore these tables are approximately correct for all $3\frac{1}{4}$ x $5\frac{1}{2}$ cameras.

(c) Heyde's Actinometer Exposure-Table may be used for any camera having shutter-speeds of any or all of the following: 1 second, $\frac{1}{2}$, $\frac{1}{5}$, $\frac{1}{10}$, $\frac{1}{25}$, $\frac{1}{50}$, $\frac{1}{100}$, $\frac{1}{200}$.

GENERAL FORMULAE
(ALL IN INCHES)

F = equivalent focus
A = distance from stop to object
b = resulting focus
M = size of object
R = size of image
C = actual speed of lens
f = theoretical speed of lens
D = dia. of aperture or stop
T = number of times aperture or time must be increased due to F being greater than "F", when focusing on an object less than 100 ft distant.
W = length or width of plate or film
A = angle of view
H = hyperfocal distance
S = distance set on focusing scale
d = dia. of circle of confusion = $\frac{1}{100}$th.
G = greatest distance of depth of focus
L = least " " " " "

$a = \frac{bF}{b-F} = \frac{F(M+P)}{P}$ $\quad T = \frac{C^2}{f^2}$

$b = \frac{aF}{a-F}$ $\quad \tan\frac{A}{2} = \frac{W}{2F}$

$P = \frac{FM}{a-F}$ $\quad H = \frac{F^2}{df}$

$f = \frac{F}{D}$ (when D = dia. of largest stop or aperture)

$C = \frac{af}{a-F} = \frac{b}{D}$ $\quad G = \frac{HS}{H-S}$

$D = \frac{F}{f} = \frac{b}{C}$ $\quad L = \frac{HS}{H+S}$

1 sheet, sheet #1.

PLATE VII

(d) The table of exposure for objects in motion in street-scenes may be modified by use of the table of speed-ratios to suit cameras of any size and make. Also the table of minimum and maximum distance for objects in motion may be used with stop F/6.3 of any camera of any size or make having a lens of 6-inch equivalent focus or thereabouts.

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(e) By means of the formulæ given under the heading "General Formulæ" a depth of focus table may be made for any lens of any camera of any make. Besides that, the other formulæ given under the same heading are absolutely essential to photographers who attempt serious work of a precise character.

(f) By means of the formulæ given in connection with the table of minimum and maximum distance for objects in motion a table may be made for any lens of any camera of any make. The theory upon which these formulæ and the tables are based gives considerably more latitude in the taking of objects in motion than is indicated by most articles dealing with this subject. It is not to be inferred that more latitude is given than really exists, but by analyzing the proposition we see that an object in motion may be a certain amount out of focus and still give a "sharp" picture within set limits. These formulæ and the table tell what this is.

Summed up in a sentence, the publication of these tables together with the formulæ furnish every user of a camera the means to make similar ones for himself if they do not apply specifically to his outfit.

Artificial Illuminants for Photographic Use

C. E. KENNETH MEES

WHILE in the early days of photography almost the only source of light was the sun, the application of artificial illuminants to the art is constantly increasing. The illuminants which are available are of many kinds, and, indeed, include all the more powerful sources of light.

For portraiture a large diffused light-source is necessary in most work, and only occasionally can a concentrated source be used. Consequently, either a very extended source, such as that given by the mercury-vapor lamp, must be employed, or else a comparatively diffused system is arranged; thus, for an arc, it is convenient to place the reflector behind the arc, so that the light is directed away from the sitter onto a large secondary reflector, which may be a wall, though it is usually more convenient to have a movable arrangement. Whatever system is used for obtaining a large source of diffused light, curtains and screens are necessary so that the operator can adjust the area and direction of the light at will. An arrangement which has given satisfaction consists of a battery of twelve or sixteen nitrogen-tungsten lamps placed in a frame behind a diffusing-medium and covering an area of 30 or 40 square feet, the area to be utilized being modified by applying independent control to the separate lamps.

For color-photography — such, for example, as color-portraiture — the most important thing about a lighting-system is the constancy of the quality of the light; but high intensity is required, and the conditions as to size of source already explained under portraiture fully apply; we have adopted the battery of nitrogen-tungsten lamps already spoken of as being very suitable for color-portraiture.

In ordinary photographic printing the Aristotype and Solio papers, which used to be very popular, are often printed by means of a large enclosed arc instead of daylight, and this seems to be very suitable for the printing of such silver papers. For platinum printing, however, it is advisable to use a source of light which is not so hot, as the heat is very likely to give mealy prints. One large company do their trade-printing by means of mercury-vapor lamps, which are held constant by a resistance and ammeter, the current being watched and the printing being done entirely by time. Bromide and chloride papers are printed by artificial light exclusively, the usual printing-cabinet containing tungsten lamps, though for quick trade-work an arc-lamp or mercury-vapor lamp is frequently used, thus ensuring very short exposures.

For enlarging it has been customary to use an open arc, but if a condensor is used it would seem to be better to employ a condensed-filament tungsten lamp, because of its great constancy, the changes in the intensity of an arc making accurate exposure difficult unless the arc is one which permits of very good regulation. Much enlarging in trade-houses is done without a condensor, the negative being lighted by a suitable diffusing-screen, behind which the source is placed, such a diffusing-screen being a sheet of opal glass. For such work suitable illuminants are the enclosed flame or open white-flame arcs, but if mercury-vapor lamps are used a powerful diffuser is not needed, a sheet of ground-glass being sufficient if the tubes of the lamp are arranged so that there are a number parallel to each other a short distance apart.—*Abstracts from the Eastman Research Laboratory notes presented as a paper before the recent annual convention of the Illuminating Engineering Society, Washington, D. C.*

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EDITORIAL

A Remunerative Hobby

THE almost incessant cry set up by amateur-photographers in Europe and America —"How can I make my camera pay?"— because they find the cost to maintain their chosen hobby somewhat expensive, has reached a point where the photographic editor is at his wit's end for a satisfactory answer. Of course, there are the usual methods to dispose of prints that have a commercial value; but does it not seem a pity for professed amateurs to commercialize their beautiful pastime? With equal justice the golfer could exclaim: "How can I make my golf-clubs pay?" He, too, finds it expensive to pursue his hobby; and when the cost of maintenance becomes a drain on his purse, he simply gives it up. He would not make it known that, in order to continue his favorite pursuit, he must find means to make it yield him pecuniary returns. Nor would the book-lover, perhaps, utter the pathetic cry: "How can I make my pastime pay?" because, forsooth, he occasionally pays out a dollar or two for a book of the day.

There seems to be no valid reason why an amateur should not seek a market for the product of his artistic or technical ability, provided it be done in a perefctly legitimate manner; but in thus commercializing his hobby, he automatically enters the semi-professional ranks, and forfeits the right to the exclusive appellation — amateur. Camerists who make their favorite pastime a source of revenue should adopt more dignified methods than those usually practised.

The Editor has not been insensible to the plaint, "How can I make my camera pay?" that appears so frequently in the photographic press; but has given it earnest and careful consideration. By ascertaining the photographic needs of such prominent book-publishers as Ginn & Company, The Macmillan Company, Harper & Brothers, Doubleday, Page & Company, Charles Scribner's Sons, The Century Company or Houghton-Mifflin Company, the really capable worker will find opportunities to furnish prints of special subjects. These include among other departments history, architecture, biology, botany, and zoölogy. It may be that the authors themselves provide the publishers with the necessary photographs; but very often there is room for additional subjects, or prints of superior technical merit. A few prints that illustrate the amateur's uncommon technical ability along special lines will generally excite the publisher's interest, and the applicant will not wait long for a reply. The wide-awake, resourceful photographer will not need to be told what course to pursue. In any event, he will ascertain what class of photographic subjects the publisher is likely to need.

Another way to make the camera pay, without sacrificing the amateur's dignity or self-respect, is to tell the story of his city or town by photographs. A lecture on this topic, illustrated by artistically colored lantern-slides, will surely prove a profitable undertaking. There is also a demand for illustrated lectures on popular scientific subjects, such as birds, trees, flowers and mushrooms. The Editor remembers how a certain amateur-photographer spent his summer-vacation in the National Parks and Rocky Mountains, photographing their salient features in a thoroughly expert manner. Having command of the best English, and being a good speaker, he converted his material into a series of illustrated lectures, which he delivered in public. Having thus found a pleasant and lucrative means to maintain his favorite pastime he gave up his regular employment and became a professional lecturer.

Still another refined way to compensate the outlay for photographic material is to hold exhibitions of one's work at home, or, if that is not feasible, in some art-store or other convenient place. The prints should be presented in an attractive manner, and prices should conform to established rates for superior professional work. This is a feature at arts and crafts exhibitions, where, however, many of the best-known pictorialists seldom exhibit. Often a group of meritorious workers will hold a joint exhibition, as was done in the Print-Gallery in New York recently, and which is reported to have been a pecuniarily successful affair. Of course, the prime object of the semi-professional photographer is publicity, and this can be attained in many ways. One is through the medium of the photographic press, an excellent reproduction of a striking subject being sure to attract the notice of firms in quest of desirable material. Needless to say, the monthly prize-competitions in PHOTO-ERA offer admirable opportunities for emolument and distinction to the capable worker.

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PHOTO-ERA MONTHLY COMPETITION

For Advanced Photographers

Closing the last day of every month. Address all prints to PHOTO-ERA, Monthly Competition, 383 Boylston Street, Boston, U. S. A.

Prizes

First Prize: Value $10.00.
Second Prize: Value $5.00.
Third Prize: Value $2.50.
Honorable Mention: Those whose work is deemed worthy of reproduction with the prize-winning pictures, or in later issues, will be given Honorable Mention.

Prizes may be chosen by the winner, and will be awarded in photographic materials sold by any dealer or manufacturer who advertises in PHOTO-ERA, or in books. If preferred, the winner of a first prize may have a solid silver cup, of artistic design, suitably engraved.

Rules

1. This competition is free and open to any camerist desiring to enter.

2. As many prints as desired, in any medium except blue-print, may be entered, but they must represent the unaided work of the competitor from start to finish, and must be artistically mounted. Sepia-prints on rough paper are not suitable for reproduction, and such should be accompanied by smooth prints on P. O. P. or black-and-white paper having the same gradations and detail.

3. Unsuccessful prints will not be returned unless return-postage at the rate of one cent for each two ounces or fraction is sent with the data.

4. Each print entered must bear the maker's name, address, the title of the picture and the name and month of the competition, and should be accompanied by a letter, SENT SEPARATELY, *giving full particulars of date, light, plate or film, make, type and focus of lens, stop used, exposure, developer and printing-process. Enclose return-postage in this letter. Data-blanks will be sent upon request.* ***Be sure to state on the back of every print exactly for what competition it is intended.***

5. Prints receiving prizes or Honorable Mention become the property of PHOTO-ERA, unless otherwise requested by the contestant. If suitable, they will be published in PHOTO-ERA, full credit in each case being given to the maker.

6. Competitors are requested not to send enlargements greater in size than 8 x 10 or mounts larger than 12 x 15, unless they are packed with *double thicknesses of* ***stiff*** *corrugated board, not the flexible kind, or with thin wood-veneer.* Large packages may be sent by express very cheaply and with indemnity against loss.

7. The prints winning prizes or Honorable Mention in the twelve successive competitions of every year constitute a circulating collection which will be sent for public exhibition to camera-clubs, art-clubs and educational institutions throughout the country. The only charge is prepayment of expressage to the next destination on the route-list. This collection is every year of rare beauty and exceptional educational value. Persons interested to have one of these PHOTO-ERA prize-collections shown in their home-city will please communicate with the Editor of PHOTO-ERA.

Awards — Vacation-Scenes

Closed November 30, 1915

First Prize: Charles M. DeBevoise.
Second Prize: Rupert Bridge.
Third Prize: William S. Davis.
Honorable Mention: Beatrice B. Bell, F. I. Jordan, E. D. Leppert, Dr. Maclay Lyon, Harry G. Phister, Wright M. Pierce, Myra D. Scales, Dr. F. F. Sornberger, H. Templeton, William J. Wilson.

Special commendation is due the following workers for meritorious prints: Geo. W. Bibby, Eva L. Eden, Hermann Gabriel, Ray Giles, Alexander Green, A. B. Hargett, Pollux Hein, A. M. Holcomb, Mrs. C. M. Hord, James P. Martin, Alexander Murray, Elise Norman, Ralph B. Williamson.

Subjects for Competition

"Night-Pictures." Closes January 31.
"American Scenic Beauties." Closes February 29.
"Home-Portraits." Closes March 31.
"Subject for PHOTO-ERA Cover." Closes April 30.
"Miscellaneous." Closes May 31.
"Speed-Pictures." Closes June 30.

Photo-Era Prize-Cup

IN deference to the wishes of prize-winners, the Publisher will give them the choice of photographic supplies to the full amount of the First Prize ($10.00), or a solid silver cup of artistic and original design, suitably inscribed, as shown in the accompanying illustration.

Is There a Parallel in Photography?

THINKERS and observers will certainly rejoice in the possession of the vivid and sincere impressions of illustrious, or simply curious, figures of the present time. One may wish that artists of to-day who have renounced the cold madrigals of ancient landscapes might replace also in their real life the distinguished figures of the past.— *David de la Gamme.*

Home-Portraits — Photo-Era Competition

Closes March 31, 1916

THIS contest differs from previous ones in that all entries must be the direct, original result, without any of the technical aids used in professional studios, such as special headscreens for softening the light in general, or locally, as on the hands, no artificial backgrounds whatever, and the light to come only from vertical windows rather than top or oblique skylights.

No retouching whatever is to be allowed on the negative. This does not mean that accidental blemishes may not be removed; but it does mean that the pencil must not be used to alter modeling or change lines in the face.

Perhaps one of the secrets of the charm of old daguerreotypes is the fact that no retouching was done, and the natural expression and skin-texture are unaltered. After the use of the pencil was begun, things went from bad to worse until the ordinary commercial photograph was so smoothed out and rounded, so altered in expression and contour, that it might better pass for a picture of a wax-figure in a draper's window than of a live, flesh-and-blood person.

A few years ago the reaction set in and, although the cheaper class of commercial photographers still retouch to excess, the better grade of workers have learned not to turn over their carefully posed and lighted negatives to an indiscriminating retoucher, but either do the work themselves or employ a person of artistic training who will do only such work on the plate as they themselves shall indicate.

The old-time retoucher felt it his conscientious duty not to leave a spot as big as the point of a pin on the whole face untouched by his pencil-point. Every wrinkle and prominent vein disappeared, every vestige of character and individuality going with them. Sixty was made to look like sixteen; and while the sitter might feel pleased and flattered (especially if it were a woman), when a man receives a picture of his mother he wants it to look like her as he knows her, not as she might possibly have looked in her youth. Every line in that face has a meaning for him, and he does not wish to have them, and the character they indicate, erased from her photographs.

The "bread and butter" worker must of necessity modify lines and eradicate double chins to please his patrons; but the amateur who is doing work to please himself and the judges will be wise enough to leave in the face of his sitter all the changed contour, the lines and the wrinkles, that life, and his attitude toward it, have engraved there. This does not mean that it should be one's object to accentuate the wrinkles until the face looks like a map in "The Blue Book." That is the other extreme, and almost equally to be avoided. It does mean that the face should be so carefully focused, posed and lighted that all the character will be retained without exaggeration of defects necessitating work with the pencil.

A little experimenting with your sitter under the light will teach you more than much talking of the "other fellow." First seat your model very close to an ordinary unscreened window. You will find one side of the face very light while the other is almost black, the eye on the shadow-side being scarcely visible. The

FATHER AND SON — KATHERINE B. STANLEY

BETWEEN DIPS — CHARLES M. DE BEVOISE

FIRST PRIZE — VACATION-PICTURES

shadow of the nose falls straight across the cheek if the shadow-side of the face gets light enough to show a cast shadow, and all the little irregularities of skin-surface cast shadows, which greatly increase their prominence.

Now move your subject farther from the source of light, and screen the lower third of the window with some opaque cloth. The shadow-side is now less dark, and the nose-shadow falls obliquely toward the corner of the mouth. If the face is a much-wrinkled one, however, you will find them still too prominent. In extreme cases one might face the sitter almost directly toward the source of light. This, however, gives so flat a light that loss of modeling is pretty sure to result. A better way is to turn the face as much into the light as is possible without sacrificing roundness, and then bring a reflector near enough to illuminate the shadow-side of the deepest wrinkles.

Remember, however, that the object is not to obliterate the wrinkles, but only to so soften them that no work on the plate will be necessary. The deep crease often found running from the nostril to the corner of the mouth, if given a straight side-illumination, will cast so heavy a shadow as to leave an almost inky black line on the print entirely untrue to nature. If it be true that the camera cannot lie, it can at least be made to vilify or flatter at the will of the operator.

Another method of softening lines and blending lights and shadows is to interpose a diffusing-screen between the sitter and the source of light. To observe the effect of this treatment, hold your finger or a pencil in such a position that it casts a strong shadow on the table, then hold a piece of tissue-paper between it and the light and see the shadow disappear.

To obtain softness in taking faces both old and young, some workers like to blur the focus very slightly, thus softening all outlines. A good way to do this is to focus as usual and then lengthen the bellows-extension just the least bit, thus bringing the point of focus a little short of the figure. If the focus is shifted in the other direction the background is apt to be too sharp for the figure and the whole composition thrown into wrong relation.

Instead of taking the picture in this way, however, many prefer to make a sharp negative and obtain softness in the printing. This may be done by placing a piece of clear celluloid between negative and paper, or by printing from the back of the plate.

The next suggestion may be put down as rank heresy, but another way to avoid the necessity of retouching is to use a lighting giving very strong contrast. This would hardly be applicable to elderly models, but with a young and smooth face defaced by freckles it is an available means of salvation. The prettiest lighting of this sort is a simulated firelight. If you have available a window that comes to the floor, well and good; if not, the subject must be posed on a platform or table to bring him on a level with the light. Cut out all light except from a section of window about two feet square on a level with the floor. The upward tendency of the light may be enhanced by placing a mirror on the floor. If a fender is available, that may be placed in front of the light and a part of it included in the picture, adding to the realism. A subject posed on the floor or in a low chair will receive the light from below, and with the room darkened and a very cautious use of reflectors a very successful firelight-effect may be obtained. In this sort of lighting it is desirable to have a strong contrast of light and shade, and the light-side of the face will be so dense that freckles will not show, and the shadow-side so dark that they are invisible.

Many facial defects may be minimized by the position in which the head is posed. Not infrequently a face is unsymmetrical. One eye is larger than the other,

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SECOND PRIZE
VACATION-
PICTURES

VACATION-DAYS — RUPERT BRIDGE

perhaps, and by posing the subject with the small eye nearer the camera the difference is not noticed in the print. Possibly the nose is crooked and in a front view it is very noticeable, but with the head turned to one side the irregularity vanishes.

The first thing to do, then, is to study your subject. Decide what good points you wish to emphasize and what defects you wish to minimize. This done, bend your energies toward posing and lighting the model in such a way that the desired results may be obtained in the negative without recourse to the aid of the retoucher.

And don't forget that human flesh — face, neck and hands — *is not white*. It has color, and should be rendered many degrees less light than a man's collar.

The choice of a printing-medium will also affect the result materially, for the softest of plates may be made to yield a harsh and impossible print if the wrong paper be chosen. An ideal paper for our present purpose is a platinum, as it softens detail and makes retouching superfluous. Any matte-surface paper is preferable to one having a gloss, and even a harsh negative can be so corrected in printing when the right paper is found that the results are most surprising.

KATHERINE BINGHAM.

Judging Lantern-Slides

EVERY lantern-slide to be judged fairly must be judged by projection on the screen. It is impossible, at least in the case of warm-toned slides, to form any perfectly reliable opinion as to their vigor until this is done; but a makeshift can be arranged which will be helpful when slide-making by constructing a little box about 3¼ x 3 x 12 inches, with a groove an inch from one end into which a slide can be dropped. That end should be closed with a piece of opal glass, and the whole interior of the box painted a dead black. On looking into such a box the slide is seen by transmitted light only. This is important in the case of slides in which the deposit itself is of a light color, as it is in the case of some warm tones, for such slides when viewed loose in the hand look much weaker than they will look on the screen. The light-colored deposit reflects the scattered light to the eye, and so does not appear to be so dense as it is in reality; the blackened box cuts off most of this reflected light. A few cover-glasses with masks of different sizes mounted on them may be kept with the box, and different sizes and proportions of masks may thus be tried before the slide is finally bound up.—*Photography and Focus.*

Sunning Down

A LANDSCAPE-PRINT in which the sky is quite white is often very much improved by sunning down; that is to say, by exposing the sky-part to white light, so that its intense whiteness is toned down a little. Although this is called "sunning down," it must not be done in direct sunshine, but in a good diffused light. It is best to have a printing-frame a good deal larger than the print, and to put in this a piece of clean glass. If this is not available, the print may be laid on some flat surface and covered with a sheet of glass, so that the work can be done without any fear of fingering the surface of the print. If the print is being made with a margin the mask should be held on the print while the negative is slipped out, so that the mask is not disturbed. In this way it is possible to show the edge of the mask all around the print, and so avoid places where, in consequence of the density of the negative, the outline of the masked area is lost in a general whiteness. A card should be used to shade the print, and it should be kept moving all the time, gradually uncovering more

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THIRD PRIZE
VACATION-
PICTURES

A WAYSIDE FARMHOUSE — WILLIAM S. DAVIS

and more of the sky from the top downwards to the horizon and then moving it up again. This will cause a gradual lightening of the general tone of the sky from above downwards, and will give a more realistic effect. It is quite easy to sun down bromide or gaslight prints, using for the purpose the same light as that by which the printing is done. If there is any likelihood of making a mistake, the sky-end of the print should be marked on the back with a cross in pencil before removing the paper from the negative.—*Photography and Focus.*

Platinotype and Its Modifications

SOME years ago, lecturing before the Royal Photographic Society on modifications in platinotype, Mr. W. H. Smith spoke very strongly against the use of a mercury salt in the developer in order to obtain warm tones on paper made to give black prints. He said that if enough mercury were used to get the warm tone, a combination was obtained which was not permanent. The same gentleman came before the same society a few evenings ago (November, 1915) and again emphasized this point. He showed a print which was developed on the occasion of the previous demonstration, the developer being potassium oxalate and mercury chloride; and although the desired warm tone was obtained, the consequence had been that much of the image had disappeared in the course of five years, and, moreover, the print had not been exposed to the atmosphere. Mr. Smith found, however, that a black print in platinum, toned solely with uranium, gave a most beautiful effect, and, so far as he had been able to find out, showed no loss in its keeping-properties.

For sepia platinum (Mr. Smith continued) it was necessary in the ordinary way to use the developer hot, but a very nice warm tone could be obtained with a cold developer of a different solution. A much finer sepia could be obtained on a sepia paper with a cold developer than could be got by using black paper and trying the use of mercuric chloride in the developer to get the result. With a small quantity of mercury there was no danger, and he advocated the plan of taking a sepia paper and using the following:

Water	80 cc.
Potassium citrate	20 grams
Citric acid	2 grams
Glycerine	80 cc.
1-percent solution of mercuric chloride	4 cc.

If, however, such a developer were used for a black print, there was not enough mercury to warm the tone, and the use of too much mercury meant the impermanence of the print.

Speaking of granularity occurring in platinotype, Mr. Smith said that this was due to underdevelopment. When the platinotype image flashed up suddenly, some workers, afraid that it might go too far, took it out at once and put it in the acid bath, and were then disappointed at getting a granular deposit. If, however, the developer did not follow the pigment right into the pores of the paper, the mere surface only was developed, and not the under part, thus causing granularity.

The Amateur Photographer.

A Substitute Wanted for Silver Nitrate

THE great scarcity of silver nitrate in Germany on account of the seizure of all nitric acid for war-munitions has set the photographic chemists busy in an effort to find a substitute, and they have been experimenting with silver chloride and sulphate, but so far, we learn, with only negative results.

THE CRUCIBLE

A MONTHLY DIGEST OF PRACTICAL FACTS FOR PHOTOGRAPHIC WORKERS

With Reviews of Foreign Magazines, Progress and Investigation

Edited by PHIL M. RILEY

Readers are encouraged to contribute their favorite methods for publication in this department
Address all such communications to The Crucible, PHOTO-ERA, 383 Boylston Street, Boston, U. S. A.

Eikonogen as a Substitute for Metol

At the time of writing, December 13, 1915, metol is not obtainable in Boston, and doubtless this condition exists elsewhere or soon will. The last quotation was $1 an ounce, and prices almost if not quite as fabulous will be asked for Rhodol, Tozol and all other equivalents while they last. This means that until there is relief from the chemical market across the seas American photographers must adopt some substitute in developers for bromide and gaslight papers. Many foresighted workers who laid in a generous supply of metol at the outbreak of the war have nearly exhausted it, and what to use in its place now presents a serious question.

Several substitutes have been suggested, even including a reversion to ferrous oxalate (see PHOTO-ERA for October, 1914, page 200), but strangely the mention of eikonogen, if it has been made at all, has not come to my attention. Possibly there may be objections to it which metol is free of, but I have used it personally with much satisfaction, and certainly in such times as these one cannot afford to be too captious. Indeed, I believe that one or more of the developers now sold and widely used under fanciful trade-names are in reality eikonogen-hydroquinone combinations. It is true that developers containing eikonogen may not safely be used to quite the same degree of exhaustion as metol-hydroquinone, nor can it be greatly diluted for slow tank-development, but otherwise there should be no serious trouble, and the quality of work during the life of the solution is excellent.

We may well consider ourselves fortunate that we still have hydroquinone, for in most instances, aside from the present, it is employed in much larger quantity than the other agent in combination with it. The price is high, $7 a pound, but the end of the supply is not yet in sight. And while it cannot be said that the quantity available of any foreign-made developer is adequate, most dealers have in stock more eikonogen than other reducers of a similar nature. The present price is $5 a pound, so that in an eikonogen-hydroquinone formula one uses the larger quantity of the cheaper developer.

Since its introduction, in 1889, eikonogen has been the chief competitor of metol as a soft-working, detail-giving agent. Although, strangely enough, regarded by most workers as a developer primarily for negative-work only, when combined with hydroquinone it becomes a remarkably useful developer for general purposes, including the development of prints, and one capable of almost as much modification as pyro. With eikonogen alone it is difficult to obtain density and snap, but a combined developer with hydroquinone unites the softness and detail-giving power of eikonogen with the density-giving power of hydroquinone, adapting it to the development of plates, films, transparencies, lantern-slides, bromide and gaslight papers.

As negatives developed with this combined developer incline towards softness with abundant detail, even in the case of forced development of underexposures it is particularly valuable for portraiture, flashlights and very rapid exposures, such as focal-plane work, or anything tending towards underexposure; also for subjects involving great contrasts in lighting.

Eikonogen appears as a yellowish-white powder, or yellowish crystals when fresh, but rapidly changes to a brownish tinge upon exposure to the air. It is sparingly soluble in water, but readily so in the presence of alkalis, particularly when heated. It is non-poisonous and does not stain the fingers. In its reducing-action eikonogen is rather more energetic than pyro or hydroquinone, being similar to ferrous oxalate and giving a clear negative of blue-black color.

Solutions may be used several times, and although they gradually darken, their strength reduces very slowly. If used too old or too much diluted, they may cause uneven action and produce peculiar streaks and blotches like finger- and brush-marks or insensitive spots, appearing as though the plate had been scrubbed with a dirty or greasy brush, or had not been properly dusted off. For this reason eikonogen-hydroquinone is not suitable for slow tank-development. If the supply fails, and a very old developer must be used, soak the plate, film or paper in water for a few minutes before immersing in the developer. This often obviates the trouble.

A standard formula is as follows:

A

Water	48 ounces
Sodium sulphite, anhydrous	2 ounces
Eikonogen	240 grains
Hydroquinone	60 grains

B

Water	16 ounces
Sodium carbonate, anhydrous	2 ounces

For plates, films, transparencies, lantern-slides, take 3 ounces of A and 1 ounce of B. The factor is 12.

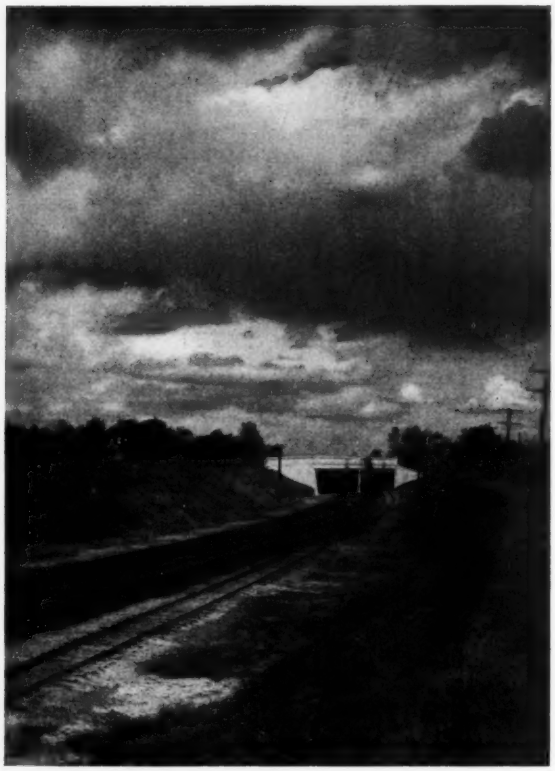
For bromide and gaslight paper add 1 drop of a saturated solution of potassium bromide to each 4 ounces of the above working-solution.

For double-coated plates, use 3 ounces of A, 1 ounce of B and 4 ounces of water.

In hot weather more water may well be used in all working-solutions, as it gives less contrast and density. Cold solutions give less density than those used at correct temperature, 65 degrees. At warmer temperatures the density is very much intensified, particularly with slow and contrast plates.

In making the stock-solutions, use boiling water, and in winter a little glycerine may be added to prevent precipitation. If a more concentrated developer is desired in order to obtain more contrast, the water in solution A may be reduced to 32 ounces. Potassium carbonate in

XUM



FIRST PRIZE
BEGINNERS' CONTEST

UNCOMMON ASPECT OF COMMONPLACE THINGS MILTON M. BITTER

place of sodium will also yield a more energetic developer. If the sulphite is of good quality, and the solutions kept in small, full bottles tightly corked, rather than in a large bottle only partly full, it will keep in good condition for an indefinite time.

When overexposure is known, old, used developer is preferred by most workers, strengthened, as development proceeds, with fresh solution and a drop or two of bromide solution. Bromide acts very powerfully with eikonogen, increasing contrast, particularly in the print. When there is a suspicion of underexposure, or when soft portrait-negatives are desired, bromide should be omitted. The quantity stated for papers will usually be enough to keep the whites clear. More will increase the olive tone of the print as well as its vigor.

Submarine-Photography

ACCORDING to the *Frankfurter Umschau*, attempts are to be made, after the conclusion of peace, to raise some of the valuables sunk during the war in a large number of ships. The raising-operations are to be assisted by direct submarine-photographs, which will give the searchers the exact position of the sunken ship and material. It is stated that an American has been making experiments with the Cooper Hewitt quartz-lamp, for the use of which he has constructed a special apparatus. He has been working with a battery of nine lamps of 2,400 candle-power each, and increasing the power by reflectors, so that he has succeeded in obtaining excellent photographs, and even kino-films, of a submarine boat under water, at a distance of thirty meters.

Hydroquinone Toning

O. KÜHNE, in the *Wiener Mitteilungen*, says that if bromide prints or diapositives are placed in a bath of 200 parts water, 5 parts potassium bromide and 1 part hydroquinone the picture is changed to an agreeable, delicate reddish tone, the coating becoming at the same time considerably hardened. After washing, this tone can be further modified. Ten-percent ammonia gives a warm black, which, however, on being washed, returns to the red tone. Alkaline sulphur salts give various brown tones. If the diapositive is briefly washed after the hydroquinone bath, and then placed in an amidol developer, a sepia-brown results; with bromide prints the color is a dark, purplish brown. These baths are also good for strengthening diapositives and bromide prints, and present many interesting possibilities for modification and improvement of prints not having a pleasing tone.

THE ROUND ROBIN GUILD

An Association of Beginners in Photography

Conducted by KATHERINE BINGHAM

This association, conducted under the auspices of PHOTO-ERA, and of which PHOTO-ERA is the official organ, is intended primarily for the benefit of beginners in photography. The aim of the association is to assist photographers by giving them information, advice and criticism in the Guild pages of PHOTO-ERA and by personal correspondence. Membership is free to subscribers and regular purchasers of the magazine sending name and address to PHOTO-ERA, The Round Robin Guild, 383 Boylston Street, Boston, U. S. A.

Mat-Cutting

THE cutting of a mat or mask for the printing of pictures seems a very simple thing, and one that hardly needs discussion, yet from the appearance of many amateurs' prints, present methods could well be improved upon. It is a pity for an otherwise attractive print to be marred by uneven lines of bordering white, with ragged edges and clogged corners.

A white border is not to be desired when a print is to be mounted, but where negatives of varying size are to be used for postcards, or when prints are to be left unmounted, it is often necessary or advisable.

"An infinite capacity for taking pains" is a very great essential in photography, and the way in which one's final product, the print, is put out is the thing by which his work is judged.

A negative of small size printed on a postcard within a mat indicates a very negligent and careless worker. The size of negative and card should be ascertained and the mask so cut that an even margin is shown. If the shape of the film forbids this, then leave an even space at the top and left side, allowing the other two margins to vary as need be.

The size of the opening having been determined, choose an opaque paper such as comes around plates or developing-paper, making sure it is an unwrinkled piece and without holes. The best cutting-surface is an old glass negative, cutting on the film side. Have a sharp knife and a ruler with a metal edge. Use a T-square to draw the outline for the opening, as corners that are not at right angles will cause you much trouble.

Having the opening laid out accurately, cut it out with the blade of the knife held rather flat, and cutting entirely through the paper the first time. Do not mind if the cut runs a trifle past the corner; better that than not going quite to the corner, and having an ugly tuft left to block the clear outline.

Having the four sides carefully cut, see if the corners have an inclination to leak light. If so, cut a small piece of paper and glue it on, just meeting the corner and covering any overlapping cuts. It simplifies adjustment to stick the mask onto a glass the size of the printing-frame. It also helps in adjusting the card if a heavy line is drawn wher the top and left side of the card should come to have the margins correct. Then, if many prints are to be made from the same film, it can be attached lightly to the mask, and so kept in register.

When ovals or circles are to be cut, the best way is to get the brass "cut-outs" and a wheel-trimmer, for the expense is not great, and there is no other really satisfactory way to cut them. It takes an unusually steady hand and accurate eye to follow an oval outline either with a knife or scissors. For square openings the Eastman chart-paper simplifies the matter of square corners, and enables one to calculate and space his opening very quickly.

Bas-Relief-Effects

THERE are many interesting "stunts" that may serve as photographic amusements, some of them giving results that are amazing but not in any sense beautiful or useful. Here is one interesting variation from the ordinary print which, if well carried out, gives some very beautiful results. The beauty of the result depends not a little on the careful choice of subject for the experiment.

A portrait of a fine head seen in profile is one of the best subjects. A good-sized flower-study would also be appropriate. The subject should be something that is beautiful in line rather than dependent on detail for its charm. If a negative is to be made especially for this use, it should be left rather thin, as that will make after-processes less lengthy.

Having your negative ready, take it into your darkroom and load another plate face to face with it in a printing-frame. Expose for only a second or two to a weak light, and develop in a rather strong developer to about the same depth as the negative.

When this glass positive is washed and dried, place the negative and positive together and hold to the light. When the two are exactly in register you will see that the image almost disappears; then, by a very slight shift one way or the other, the resulting image has the effect of a marble bas-relief. The accent of light can be put wherever you wish by shifting the plates, and when the desired result is secured it is advisable to bind the plates together by one or two strips of paper over the edges to keep them from shifting.

Place the two plates together into your printing-frame, and also the sensitive paper. The double density will make the time of exposure rather long, and care must be taken to have the rays of light strike the frame squarely, as the thickness of the glass is between the film and paper. Printing at the bottom of a box is the safest way, perhaps. The same results may be obtained by using an oiled paper print as the positive, but this makes printing almost too slow to be practical.

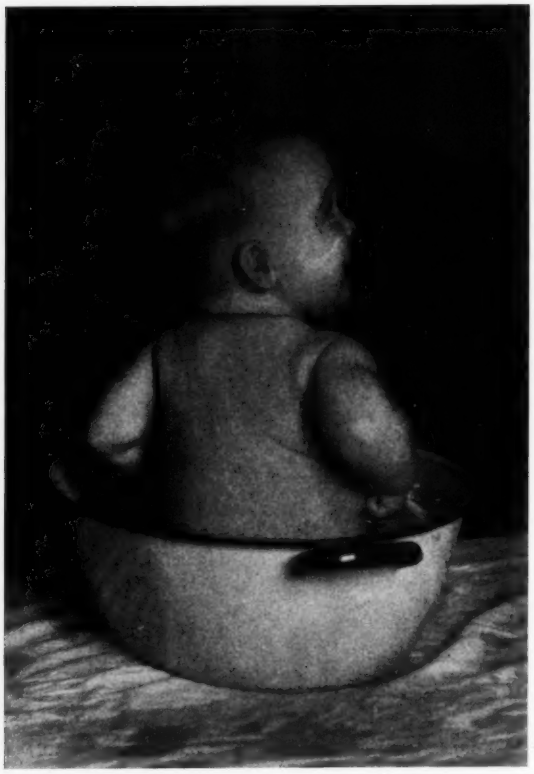
Just as Good

Talkative Customer — "And what are your views on the Balkans?"

Shopman — "I 'm very sorry, sir, but we ain't got none. We've got some lovely photographic views of the market-place, the parish-church and new town-'all at a penny each."—*Exchange.*

XUM

SECOND PRIZE
BEGINNERS' CONTEST



"HOW JOLLY" C. H. JUDSON

A New German Film

THE *Photographische Wochenblatt* reports that a new roll-film has recently been placed on the market by F. Bayer, of Leverkusen, near Cologne, Germany, which is welcomed with much pleasure on account of the great scarcity of films. The new film is not coated with gelatine on the back, but is non-curling, which is a great advantage; it is also said to be less inflammable than the old kind, because it is not made of celluloid, but of cellite (acetylcellulose). It would be a good thing if this should prove a step towards the elimination of celluloid films, the use of which always presents a great fire-danger.

Distance-Photography with Infra-Red Rays

CERTAINLY we have reason to believe that we have only reached the beginning of the scientific applications of photography, particularly in the application of radiations beyond those of the visible spectrum. Much has been done with the rays beyond the ultra-violet; it is known that those invisible rays are capable of being transmitted through glass, and that other rays still further on may be transmitted through quartz, though not through glass. Some time ago Prof. R. W. Wood, of Johns Hopkins University, startled the world with photographs made with the aid of radiations at the infra-red and ultra-violet ends of the scale, and now comes the announcement that an alizarin blue dye has been found which, when used in conjunction with silver nitrate, carries the sensitiveness of photographic plates far down into the infra-red, and also shortens the exposure with the yellow screen. Remarkable photographs of mountain-ranges have been made with plates so sensitized. In this connection *Photographische Industrie* states that by the use of a suitable filter and plates sensitive to infra-red rays, remarkably clear photographs may be made through a misty atmosphere. The following infra-red sensitizer is recommended:

Alcohol	200 cc.
Ammonia	4 cc.
Alizarin Blue S.	0.04 g.
Silver nitrate (10-percent sol.)	5 drops

Mix the ingredients in the order given, bathe the plate for three minutes and dry rapidly over a dessicating-agent.

EVERY face talks the better when it talks without saying anything.—*David de la Gamme.*

THE ROUND ROBIN GUILD MONTHLY COMPETITION

For Beginners Only

Closing the last day of every month. Address all prints to PHOTO-ERA, Round Robin Guild Competition, 383 Boylston Street, Boston, U. S. A.

Restrictions

ALL Guild members are eligible in these competitions provided they never have received a prize from PHOTO-ERA other than in the Beginners' Class. Any one who has received only Honorable Mention in the PHOTO-ERA Monthly Competition for advanced workers still remains eligible in the Round Robin Guild Monthly Competition for beginners; but upon winning a prize in the Advanced Class, one cannot again participate in the Beginners' Class. Of course, beginners are at liberty to enter the Advanced Class whenever they so desire.

Prizes

First Prize: Value $5.00; *Second Prize:* Value $2.50; *Third Prize:* Value $1.50; *Honorable Mention:* Those whose work is worthy will be given Honorable Mention.

A certificate of award, printed on parchment paper, will be sent on request.

Subject for each contest is "**General**"; but only original prints are desired.

Prizes may be chosen by the winner, and will be awarded in photographic materials sold by any dealer or manufacturer who advertises in PHOTO-ERA, or in books.

Rules

1. These competitions are free and open to all members of the Round Robin Guild. Membership is free to all subscribers; also to regular purchasers of PHOTO-ERA on receipt of their name and address, for registration, and that of their dealer.

2. As many prints as desired, in any medium except blue-print, may be entered, but they must represent the unaided work of the competitor from start to finish, and must be artistically mounted. Sepia-prints on rough paper are not suitable for reproduction, and such should be accompanied by smooth prints on P. O. P. or black-and-white paper having the same gradations and detail.

3. *Unsuccessful prints will not be returned unless return-postage at the rate of one cent for each two ounces or fraction is sent with the data.* ***Criticism on request.***

4. *Each print entered must bear the maker's name, address, Guild-number, the title of the picture and the name and month of the competition, and should be accompanied by a letter,* SENT SEPARATELY, *giving full particulars of date, light, plate or film, make, type and focus of lens, stop used, exposure, developer and printing-process. Enclose return-postage in this letter. Data-blanks will be sent upon request.* ***Be sure to state on the back of every print exactly for what contest it is intended.***

5. Prints receiving prizes or Honorable Mention become the property of PHOTO-ERA, unless otherwise requested by the contestant. If suitable, they will be published in PHOTO-ERA, full credit being given.

6. Competitors are requested not to send enlargements greater in size than 8 x 10 or mounts larger than 12 x 15, unless they are packed with *double thicknesses of* ***stiff*** *corrugated board, not the flexible kind, or with thin wood-veneer.* Large packages may be sent by express very cheaply and with indemnity against loss.

Awards — Beginners' Contest

Closed November 30, 1915

First Prize: Milton M. Bitter.
Second Prize: C. H. Judson.
Third Prize: J. Louis Cunningham.
Honorable Mention: Lawrence C. Byck, Ralph D. Count, Martha Curry, J. F. Eden, Louis R. Murray, John J. Neuer, John H. Pierce, Pitt P. Pinckney, H. B. Rudolph, C. Howard Schotofer, M. C. Still, A. S. Upton, A. J. Voorhees, Ralph B. Williamson, William J. Wilson.

Special commendation is due the following workers for meritorious prints: Margaret Anderson, Napoleon M. Bernier, Jr., Orton Horace Clark, J. R. Golden, J. K. Hodges, M. de Leon Imus, V. Max Kennery, Harry D. Pink, Jacob Pudliner, Mrs. H. G. Reed, F. W. Ruttzer, W. Stelcik, Cavett V. V. Turner, J. H. Woodhead.

Why Every Beginner Should Compete

THE trouble with most competitions is that they place the beginner at a disadvantage. If advanced workers be allowed to compete, beginners have little chance to win prizes, and so quickly lose interest after a few trials.

There are two monthly competitions in which prints may be entered with prizes commensurate with the value of the subjects likely to be entered. They are: The Round Robin Guild Competition and the PHOTO-ERA Competition. The former is the better one for a beginner to enter first, though he may, whenever it pleases him, participate in the latter.

As soon as one has been awarded a prize in the PHOTO-ERA Competition, he may consider himself an advanced worker, so far as PHOTO-ERA records are concerned, and after that time, naturally, he will not care to be announced as the winner of a prize in the Beginners' Class, but will prefer always to compete in the PHOTO-ERA Competition for advanced workers. In accordance with this natural impulse, it has been made a rule by the Publisher that prize-winners in the Advanced Class may not compete in the Beginners' Class.

To measure skill with other beginners tends to maintain interest in the competition every month. Competent judges select the prize-winning prints, and if one does not find his among them there is a good reason. Sending a print which failed to the Guild Editor for criticism will disclose what it was, and if the error be technical rather than artistic, a request to the Guild Editor for suggestions how to avoid the trouble will bring forth expert information. The Round Robin Guild Departments form an endless chain of advice and assistance; it remains only for its members to connect the links. To compete with others puts any one on his mettle to achieve the best that is in him, and if, in competing, he will study carefully the characteristics of prize-winning prints every month, and use the Guild correspondence privilege freely, he cannot help but progress.

XUM

Answers to Correspondents

Subscribers and regular readers wishing information upon any point in connection with their photographic work are invited to make use of this department. Address all inquiries to Correspondence Department, PHOTO-ERA, *383 Boylston Street, Boston, U. S. A. If a personal reply is desired, a self-addressed, stamped envelope must be enclosed.*

H. W. J.— The **Fraunhofer Lines,** in spectrum analysis, are the transverse dark lines observed when viewing the solar spectrum in a spectroscope.

D. A. P.— **To develop a panchromatic plate,** which is sensitive to all colors, that light must be used by which one can see the most with the least possible illumination, which is a green safelight. Such a safelight usually consists of a sheet of glass coated with a bright yellow gelatine film, and another sheet coated with a bright green film, bound face to face, with a thick sheet of green paper between. Obviously these colors must be accurately adjusted in the spectroscope and by trial with the plates. Every manufacturer of panchromatic plates either sells a suitable safelight or recommends one, and the camerist will do well to adopt it.

W. C. R.— **The role of potassium metabisulphite in the developer** is purely that of a preservative. As such it is conceded to be more satisfactory than the usual oxalic acid in a pyro-formula. For 30-minute development at a temperature of 65 degrees the following is excellent:

A.	Water	16 ounces
	Potassium metabisulphite	70 grains
	Pyro	1 ounce
B.	Water	16 ounces
	Sodium sulphite, anhydrous	3 ounces
C.	Water	16 ounces
	Sodium carbonate, anhydrous	1 ounce

For use take ¾ ounce of each stock-solution and make up to 48 ounces with water.

J. G.— **To photograph mahogany furniture** so that the grain will show, employ a panchromatic plate and an orange-red filter, such as the Wratten & Wainwright Tricolor A. This will record the greatest possible contrast between the lighter and darker portions of the wood, and so make the most of the beauty of the grain. For very dark, old mahogany or rosewood it may be necessary to employ a deep-red filter, such as the Wratten & Wainwright F. This should be avoided if possible, however, because the manner in which it overcorrects all lighter tones tends to give a general impression of untruth.

A. J. V.— **Most developers oxidize and darken in the light and air,** some of them more than others, and much more rapidly in solution than in a dry state. This accounts for the use of orange-glass bottles, paraffined stoppers and sulphites and acids as preservatives in solutions. It is a wise precaution to keep solutions in orange-glass bottles as well as the dry developer itself, or else to store it in a dark place.

Pyro discolors rapidly in solution unless preserved under as nearly perfect conditions as possible. There seems to be a growing belief that potassium metabisulphite is the best preservative. Hydroquinone keeps well in solution, as does metol in the presence of alkaline sulphites. In a solid state metol keeps indefinitely. Potassium metabisulphite crystals oxidize upon exposure to air, although more slowly than sulphites. In doing so a white powder forms on the crystals, which should be removed before the crystals are used. The salt should also have a strong sulphurous odor when in good condition. Keep the bottle tightly corked.

"BE IT EVER SO HUMBLE, THERE'S NO PLACE LIKE HOME" J. L. CUNNINGHAM
THIRD PRIZE — BEGINNERS' CONTEST

Soda salts, such as carbonate and sulphite should be anhydrous, as they are less readily affected by the action of the air. Sulphite, for instance, is gradually oxidized to sulphate with a consequent lowering of the percentage of sulphurous acid, which impairs its preservative effect. On the other hand, the dry salt has a slight tendency to absorb moisture and harden, but this disadvantage is small in comparison with the change in composition of the crystals, because the lumps may be broken up readily.

In solution, anhydrous sulphite keeps no better than crystal. To test either salt for purity, add a little hydrochloric acid to a solution and then a few drops of barium chloride solution. A milkiness or precipitate denotes the existence of sulphate, which acts as a restrainer in the developer. Sulphite solution over one month old should not be expected to be full strength unless made with distilled water and kept in full, well stoppered bottles.

The exact strength of anhydrous sodium carbonate can be assured by heating it in a basin over a spirit-lamp, any moisture being driven off. As the anhydrous salt readily absorbs ten percent of moisture it should be kept in well stoppered bottles.

Print-Criticism

Address all prints for criticism, enclosing return-postage at the rate of one cent for each two ounces or fraction thereof, to Correspondence Department, PHOTO-ERA, *383 Boylston Street, Boston, U. S. A. Prints must bear the maker's name and address, and be accompanied by a letter, sent separately, giving full particulars of date, light, plate or film, stop used, exposure, developer and printing-process.*

H. F. P.—"Drifting Clouds" is unique and interesting as a subject, and the spacing is good; yet the subject-material is so commonplace that one's interest is not greatly aroused. This effect of low-lying clouds is not often photographed although often found in nature.

G. S. T.— You have a pleasing composition in "Landscape," but the diffusion is rather too great for the size of the print. The composition is attractive as a study in tone, but one is left in considerable doubt as to what the light speck on the water may be. Perhaps a smooth matte paper would disclose this. Your other prints are of similar character. "Chaos" is interesting as a study in spacing, but the average person would hardly consider that it contains enough material for a photograph.

W. R. B.— Your photographs through arches with silhouetted figures are exceedingly interesting, although that through the arch in the City Hall, Philadelphia, is rather more fantastic in shape, and so less pleasing.

L. R. M.— All of your subjects appear to be underexposed and forced in development, and many of them are badly halated. We have published some interesting articles on halation — a subject about which you might read with interest. Undoubtedly the best scheme for avoiding halation is to use double-coated plates and develop in the tank with a hydro-metol formula containing no carbonate. This formula you will find in PHOTO-ERA for July, page 14. The standard Orthonon plate should give good results with this treatment.

P. E. K.— Your photograph of the "East Entrance to the State Capitol," Hartford, Conn., is an excellent piece of work except that the lens appears not to have covered at the upper right-hand corner; presumably the rising front has been forced above a reasonable limit. Your photograph of the entire State Capitol suffers from a somewhat unfortunate viewpoint. The large mortar at the left is so large in the picture-space as to vie with the building itself.

C. H. K.— In composition and general quality your architectural work is excellent, although it is obvious that some of the clouds in your various subjects have been worked-in, or at least worked-up; notably in your photograph of the D. A. R. Hall, in which, by the way, your vertical lines are not in every instance plumb.

M. H. B.— The viewpoints of your architectural work seem to be well taken for the most part, although in both of your photographs of the White House the shrubs in the immediate foreground are unfortunate, for they are out of focus and appear to have moved during exposure. The idea of a broad shadow in the foreground, as in the photograph of the D. A. R. Building, is very attractive. The scheme demands that the shadow be transparent rather than in black and without detail. All of your work seems to be undertimed and forced in development.

W. R. L.— In most respects your photograph of the "Library of Columbia University" is a good piece of technical work. Some of the vertical lines are out of plumb, however, and it is unfortunate that the flag is so badly blurred. Have you selected the best possible viewpoint from which to photograph this building? It would seem desirable to avoid placing anything, such as a huge flower-pot or candelabrum, directly in front of the doorway. Also it would seem that a position somewhat to the left of the one chosen would take the other façade of the building well under the dome and give a better effect of unity.

A. S. H.— Marines such as you have entered in one of our recent competitions, in which a sail-yacht occupies so small an area, require excellent cloud-effect, which is totally absent in both subjects. Trimming would work quite an improvement, making it possible to give decidedly more space either to water or sky, and making it possible to place the sail-yacht obviously to one side of the center of the print.

If you will try one of the enlarging-gaslight papers, such as Cyko, Rexo or Artura, you will find that far more of the character of the original small negative will be retained, and that the results will be far more pleasing than the flat, grainy appearance of your prints.

K. S. R.— Why not trim "On Lake Oswego" so that the distant waterline will be level, and at the same time remove most of the foreground, for the picture is entirely in the middle-distance, and the foreground is disturbing? The eyes insist upon returning to it despite its unimportance.

ALONG THE SANDY SHORE — C. HOWARD SCHOTOFER

HONORABLE MENTION — BEGINNERS' CONTEST

XUM

Calculated to give Full Shadow-Detail, at Sea-Level, 42° N. Lat.

For altitudes up to 5000 feet no change need be made. From 5000 to 8000 feet take ¾ of the time in the table. From 8000 to 12000 feet use ½ of the exposure in the table.

Exposure for average landscapes with light foreground, river-scenes, light-colored buildings, monuments, snow-scenes with trees in foreground. For use with Class 1 plates, stop F/8, or U. S. 4. For other plates, or stops, see the tables on the opposite page.

*These figures must be increased up to five times if the light is inclined to be yellow or red.
†Latitude 60° N. multiply by 3; 55° × 2; 52° × 2; 30° × ¾.
‡Latitude 60° N. multiply by 2; 55° × 2; 52° × 1½; 30° × ¾.
¶Latitude 60° N. multiply by 1¼; 55° × 1; 52° × 1; 30° × ½.
§Latitude 60° N. multiply by 1¼; 55° × 1; 52° × 1; 30° × ½.

HOUR	MONTH AND WEATHER																			
	JAN., NOV., DEC. †					FEB., OCT. ‡					MAR., APR., AUG., SEPT. ¶					MAY, JUNE, JULY §				
	Bright Sun	Hazy Sun	Diffused Light	Dull	Very Dull	Bright Sun	Hazy Sun	Diffused Light	Dull	Very Dull	Bright Sun	Hazy Sun	Diffused Light	Dull	Very Dull	Bright Sun	Hazy Sun	Diffused Light	Dull	Very Dull
11 A.M. to 1 P.M.	1/32	1/16	1/8	1/4	1/2	1/32	1/16	1/8	1/4	1/2	1/50	1/25	1/12	1/6	1/3	1/60	1/30	1/15	1/8	1/4
10–11 A.M. and 1–2 P.M.	1/25	1/12	1/6	1/3	2/3	1/25	1/12	1/6	1/3	2/3	1/40	1/20	1/10	1/5	1/2	1/60	1/30	1/15	1/8	1/4
9–10 A.M. and 2–3 P.M.	1*/12	1*/6	1*/3	2*/3	1*	1/16	1/8	1/4	1/2	1*	1/40	1/20	1/10	1/5	1/2	1/50	1/25	1/12	1/6	1/3
8–9 A.M. and 3–4 P.M.						1*/5	1*/2	1*	1 1*/2	3*	1/30	1/15	1/8	1/3	2/3	1/30	1/15	1/8	1/4	1/2
7–8 A.M. and 4–5 P.M.											1/20	1/10	1/5	1/2	3/4	1/20	1/10	1/5	1/3	2/3
6–7 A.M. and 5–7 P.M.											1*/15	1/8	1*/2	3*/4	1*	1/15	1/8	1/4	1/2	3/4
5–6 A.M. and 6–7 P.M.																1*/10	1*/5	1*/3	2*/3	1 1*/2

The exposures given are approximately correct, provided the shutter-speeds are accurately marked. In case the results are not just what you want, use the tables merely as a basis and increase or decrease the exposure to fit the conditions. Whenever possible keep the shutter-speed uniform and vary the amount of light when necessary by changing the stop. **Focal-plane shutters require only one-third of the exposures stated above.**

SUBJECTS. For other subjects, multiply the exposure for an average landscape by the number given for the class of subject.

1/8 Studies of sky and white clouds.

1/4 Open views of sea and sky; very distant landscapes; studies of rather heavy clouds; sunset- and sunrise-studies.

1/2 Open landscapes without foreground; open beach, harbor- and shipping-scenes; yachts under sail; very light-colored objects; studies of dark clouds; snow-scenes with no dark objects; most telephoto-subjects outdoors; wooded hills not far distant from lens.

2 Landscapes with medium foreground; landscapes in fog or mist; buildings showing both sunny and shady sides; well-lighted street-scenes; persons, animals and moving objects at least thirty feet away from the camera.

4 Landscapes with heavy foreground; buildings or trees occupying most of the picture; brook-scenes with heavy foliage; shipping about the docks; red-brick buildings and other dark objects; groups outdoors in the shade.

8 Portraits outdoors in the shade; very dark near objects, particularly when the image of the object nearly fills the plate and full shadow-detail is required.

16 to 48 Badly-lighted river-banks, ravines, glades and under the trees. **Wood-interiors** not open to the sky. **Average indoor-portraits** in a well-lighted room, light surroundings.

PLATES. When plates other than those in Class I are used, the exposure indicated above must be multiplied by the number given at the head of the class of plates.

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For Perpetual Reference

As all the figures in the table opposite are based upon the use of stop F/8, or U. S. 4, it does not appear here among the ratios for other stops.

		For other stops multiply by the number in the third column
U. S. 1	F/4	× 1/4
U. S. 2	F/5.6	× 1/2
U. S. 2.4	F/6.3	× 5/8
U. S. 3	F/7	× 3/4
U. S. 8	F/11	× 2
U. S. 16	F/16	× 4
U. S. 32	F/22	× 8
U. S. 64	F/32	× 16

Example

The factors that determine correct exposure are, first, the strength of light; second, the amount of light and dark in the subject; third, speed of plate or film; fourth, the size of diaphragm used.

To photograph an average landscape with light foreground, in Feb., 2 to 3 P.M., bright sunshine, with plate from Class 1, R. R. Lens, stop F/8 (or U. S. 4). In the table look for "Hour," and under the column headed "Bright Sunshine," note time of exposure, 1/16 second. If a smaller stop is used, for instance, F/16, then to calculate time of exposure multiply the average time given for the F/8 stop by the number in the third column of the table for other stops, opposite the diaphragm chosen. The number opposite F/16 is 4. Multiply 1/16×4=1/4. Hence, the exposure will be 1/4 second.

For other plates consult the table of plate-speeds. If a plate from Class 1/2 be used, multiply the time given for average exposure, F/8 Class 1, by the number of the class. 1/16×1/2=1/32. Hence, the exposure will be 1/32 second.

Speeds of Plates on the American Market

Class-Numbers. No. 1, Photo-Era. No. 2, Wynne. No. 3, Watkins

Class 1/3, P. E. 156, Wy. 350, Wa.
Ilford Monarch
Lumière Sigma
Marion Record
Seed Graflex
Wellington Extreme

Class 1/2, P. E. 128, Wy. 250, Wa.
Ansco Speedex Film
Barnet Super-Speed Ortho.
Central Special
Cramer Crown
Eastman Speed-Film
Hammer Special Ex. Fast
Imperial Flashlight
Seed Gilt Edge 30
Wellington 'Xtra Speedy

Class 3/4, P. E. 120, Wy. 200, Wa.
Barnet Red Seal
Cramer Instantaneous Iso.
Defender Vulcan
Ensign Film
Hammer Extra Fast, B. L.
Ilford Zenith
Imperial Special Sensitive
Paget Extra Special Rapid
Paget Ortho. Extra Special Rapid

Class 1, P. E. 111, Wy. 180, Wa.
American
Ansco Film, N. C.
Atlas Roll-Film
Barnet Extra Rapid
Barnet Ortho. Extra Rapid
Central Comet
Imperial Non-Filter
Imperial Ortho. Special Sensitive
Kodak N. C. Film
Kodoid
Lumière Film and Blue Label
Marion P. S.
Premo Film-Pack
Seed Gilt Edge 27
Standard Imperial Portrait
Standard Polychrome
Stanley Regular
Vulcan Film
Wellington Anti-Screen
Wellington Film
Wellington Speedy
Wellington Iso. Speedy

Class 1 1/4, P. E. 90, Wy. 130, Wa.
Cramer Banner X
Cramer Isonon
Cramer Spectrum
Defender Ortho.
Defender Ortho., N.-H.
Eastman Extra Rapid
Hammer Extra Fast Ortho.
Hammer Non-Halation
Hammer Non-Halation Ortho.
Seed 26x
Seed C. Ortho.
Seed L. Ortho.
Seed Non-Halation
Seed Non-Halation Ortho.
Standard Extra
Standard Orthonon

Class 1 1/2, P. E. 84, Wy. 160, Wa.
Cramer Anchor
Lumière Ortho. A
Lumière Ortho. B

Class 2, P. E. 78, Wy. 120, Wa.
Cramer Medium Iso.
Ilford Rapid Chromatic
Ilford Special Rapid
Imperial Special Rapid
Lumière Panchro. C

Class 3, P. E. 64, Wy. 90, Wa.
Barnet Medium
Barnet Ortho. Medium
Cramer Trichromatic
Hammer Fast
Ilford Chromatic
Ilford Empress
Seed 23
Stanley Commercial
Wellington Landscape

Class 5, P. E. 56, Wy. 60, Wa.
Cramer Commercial
Hammer Slow
Hammer Slow Ortho.
Wellington Ortho. Process

Class 8, P. E. 39, Wy. 30, Wa.
Cramer Contrast
Cramer Slow Iso.
Cramer Slow Iso. Non-Halation
Ilford Halftone
Ilford Ordinary
Seed Process

Class 100, P. E. 11, Wy. 3, Wa.
Lumière Autochrome

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OUR ILLUSTRATIONS

WILFRED A. FRENCH

DIFFERENT from footprints on the sand, those made in the snow seem to stir the imagination to a greater degree, for the question rises for utterance: "Whither do they lead?" In a spot a long way from human habitation, there is the element of doubt, if not of anxiety, and, in any case, of interest. To the initiated, however, the scene which Mr. Boyden has portrayed — see our front-cover and page 62 — is devoid of mystery, for the tracks are what he, himself, had made. He simply stopped in his tracks, turned about and made the picture. Instead of representing a monotonous stretch of snow, Mr. Boyden — as skilful a painter as he is a photographer, his use of the camera having preceded his desire to become a master of the brush — pictured a deserted winter-scene, replete with interest and pictorial beauty. Indeed, the glare that usually marks a "snowy mantle" is entirely absent; even the highlights are not pure white. He obtained his effect by judiciously utilizing the slanting rays of the sun — long shadows. The main interest is in the foreground, and diminishes as the line of depressions recedes and vanishes in the distance. As happens frequently, the composition affords two complete pictures, the more attractive one being the clouded landscape, at the top. Data: February, 4 P.M.; sun obscured by clouds; Goerz Celor No. 7, 14-inch focus; 8 x 10 Standard Orthonon; pyro-soda; 8 x 10 gaslight-print.

The illustrations to the article on clouds, by Mr. Davis, are chiefly explanatory, and are not to be taken as examples of that artist's best work. A better opportunity is afforded on page 82, this issue.

Although not free of faults, the picture of a young girl reading a book, page 57, possesses much charm. The picture was made a number of years ago, at a time when cutting down prints without regard to the physical contours of the sitter in order to produce a striking, bizarre effect had considerable vogue. This method of pictorial surgery was justly condemned by every sensible critic, and, fortunately, it was short-lived. Aside from representing a surrender to a temporary caprice, the "Home-lesson" offends by incongruous and diverting highlights — the collar, hand and book. Thus, the "Home-lesson" becomes an "object-lesson" in what to avoid, and, what is more, its faults are quite easy to avoid. No data.

The home of George Washington, page 60, becomes more and more sacred to true, loyal Americans as the years roll on. This stately, old-time homestead is, indeed, the Mecca of Americans in reality as well as in spirit. How the mind will conjure up the events in the career of the saviour of his country! It will halt with anxiety, followed by a sense of relief when it reaches the siege of Yorktown, where, by Divine Providence, at the most critical moment in the struggle for freedom, the Continental Army succeeded, with the aid of La Fayette. The portrayal, by Carl H. Kattelmann, of the shrine — at which on February the twenty-second all loyal hearts will bow in reverence — is manifestly the work of a sincere admirer of George Washington. The building is seen to crown a slight eminence, on the slope of which are clustered the shadows of noble trees, forming an appropriate and expressive picture, one somewhat different from those one has been accustomed to see. Data: August, 1 P.M.; sunshine; 5 x 7 Premo; Kodak Anastigmat; 6½-inch focus; stop, F/16; 3-time color-screen; 1 second; Standard Ortho; pyro, tank; 5 x 7 print on Azo A Hard.

Charles E. Vaughan, the poetic interpreter of an inspiring scene charged with mystery and promise, and Ina L. Cook, a sympathetic collaborator stimulated by her willing muse, have achieved an extremely happy labor of love. Picture and poem are blended into one harmonious whole, like a perfect song. But let each speak for itself. Data: May 31, 1915, at sunrise; slightly hazy, due to light fog rising; Graflex 3¼ x 5½; Goerz 7-inch Dagor; stop, full opening, viz., U. S. 2.9; about $\frac{1}{75}$ second (note the man at extreme left); Eastman N. C. film; Celeritas; postcard Noko print.

The effect of early morning in the picture by C. H. Schotofer, page 71, has been interpreted very successfully. The pictorial composition also merits high praise. The group of men, at the right, and obviously unconscious of being photographed, is balanced unobtrusively by the approaching team. The interesting objects take their places very quietly. The sense of illusion is complete. Data: October, 7 A.M.; sun shining through mist; Icarette, Model A; R.R. lens; stop, F/8; $\frac{1}{25}$ second; Eastman N. C. film; pyro, tank; enlarged on Cyko Plat.

"A Veteran," page 73, is a reproduction of an old print — it has been in possession of PHOTO-ERA for a number of years, having been given the Editor in 1907. One of our friends said that he met the old army-man in the Spellman studio, Detroit, about eight years ago, a striking-looking model with heavy bronzed features and snow-white hair and beard. He considered the picture one of the best Spellman ever made. No data.

The group, page 79, that serves as an admirable example of home-portraiture, is by one of the most successful specialists in New England — Katherine B. Stanley. Although the infant is clad entirely in white — always a trying problem for the artistic photographer — the dress is judiciously subdued and filled with beautiful gradations. The group breathes that at-home feeling which photographers are so eager to catch. This is one of the factors of Miss Stanley's success as a home-portrait photographer, and whose pictures are always worthy close study. Data: April, noon; Eastman Home-Portrait camera; Bausch & Lomb-Zeiss Tessar II B; 8½-inch focus, used at full opening; $\frac{1}{25}$ second; Eastman tank; 5 x 7 Artura Sepia print; hot gold toning-bath.

The Photo-Era Monthly Competition

THAT the spirit of the present competition, "Vacation-Pictures," has been well carried out is evident from the prints that have been accorded official recognition, and that speak of radiant sunshine and the invigorating zephyrs.

A complete, sentimental story is suggested by the engaging figure seated on the strand, page 80. One may be sure that the fortunate camerist conserves pleasant recollections of his summer-vacation at some popular seaside-resort. His "summer-girl" — shall we call her? — is easily and gracefully posed before the artist; so well, indeed, that she seems an inseparable part of this foam-bordered beach. The lighting on face and

hands delights the eye of the connoisseur, and the dark bathing-costume, too, betokens fine photo-technical skill. Data: August, 2 P.M.; hazy sunlight; 5 x 7 Korona camera; R.R. lens; stop, U. S. 8; $\frac{1}{50}$ second; Hammer Special; pyro, tank; print, Azo E, toned in hypo-alum.

From Mr. DeBevoise's sunny incident one turns to one quite opposite in character — a cool, shady nook, page 81. The boys are just about to turn the boat with a view to making a landing, or to go farther up the stream. The plan of the composition is finely conceived, and the position of the boat with its occupants is particularly well managed. Data: August, noon; good light; 14½-inch Verito; stop, F/4; quick bulb exposure; 6½ x 8½ Orthonon; pyro, tank; direct print on Argo B.

The farmhouse in its attractive setting of light and shadow forms a delightful picture. Page 83. One can scarcely expect anything less successful from the master-pictorialist, William S. Davis. The plain dwelling overshadowed by trees; the shady road; the vegetable-garden; the cloud-embellished sky — all contribute to this beautiful ensemble. Note, too, how prudently the light was chosen; for to this circumstance the composition owes its success. Data: Clear October day, 12.30 P.M.; $\frac{1}{15}$ second; 6-inch Ilex Anastigmat; stop, F/6.3; Wellington Anti-Screen; clouds printed-in; enlargement on Velours Black.

The Beginners' Competition

MILTON M. BITTER deserves high praise for selecting ordinary camera-material and investing it with beauty. Page 84. The railway-tracks — generally quite unattractive — here assume an undeniable charm in their uncommon perspective: the banks, take either side, are edged with trees; the sky is filled with radiance — all enclosing the railway-bridge of angular construction and devoid of all pictorial charm, yet appearing here, by reason of its pleasing accessories, as an engaging object. But lo! the imp with scissors agape is eagerly awaiting his chance. Yes; he vows that the horizon-line divides the picture virtually in halves; hence the foreground needs curtailing, else the top must submit to the operation. What say those who view this picture critically? Data: Early October, 1.30 P.M.; bright light; 5 x 7 Conley camera; Gundlach-Manhattan Convertible R.R. lens; Ingento 3-time color-screen; exposure, three times $\frac{1}{25}$ second in rapid succession, when sun shone between clouds, with Ilex "General" automatic self-setting shutter; Seed L. Non-Hal. Ortho; Cramer's pyro-acetone; direct print on Cyko Professional Plat. through an Eastman Portrait-Film from which the emulsion and gelatine had been removed; exposed 50 seconds, 12 inches from an ordinary fish-tail gas-flame; print developed 1 minute in Cyko H. M. tube-developer at 65 degrees.

Who of the gentler sex but will express her delight with the baby in the bowl! Page 86. These exclamations will surely be numerous and surely well deserved. The technique, too, merits high praise, the flesh-tints being well rendered and a general soundness marking the nude figure — the little daughter of the camerist — despite the unusually rapid exposure. Data: May 9, A.M.; good sunlight outside; Goerz Taro Tenax 3¼ x 4¼; 5-inch Dogmar F/6.3, used at full opening; $\frac{1}{50}$ second; Marion Record plate; Rytol; enlargement on Velours Black Silk.

The presentation of the unpretentious little home, page 88, is very pleasing, and the workmanship clean-cut. Good judgment is shown in the choice of illumination, and, with its excellent chemical qualities, the negative should yield an enlargement of almost any desired dimensions. Data: August, 1915, 1.30 P.M.; dull light; Eastman speed-film; 3 A Graflex, B & L-Zeiss Tessar Ic, F/4.5, 7¼-inch focus; stop, F/6.3; $\frac{1}{100}$ second; East an tank; Azo Grade E. Hard; M.Q.

Notwithstanding its narrow escape from being freakish in appearance, Mr. Schotofer's shore-scene has much solid merit. There is a degree of imaginative quality in the receding couple, though the nature of the promenade is not at all obvious. Data: August, 6 P.M.; Icarette, Model A; R.R. lens; stop, F/8; $\frac{1}{25}$ second; Eastman film; tank-developed in pyro; enlarged on Enlarging-Cyko Plat.

Ferrous Oxalate Intensification

THE old-time developer, ferrous oxalate, has undoubtedly come into wider use, due to the scarcity and high price of the more commonly employed modern reducers. Since formulæ were published in this department, October, 1914, metol has become unobtainable in Boston and most other cities, and pyro, hydroquinone and most of the other popular agents are selling at very high prices.

Those who were in the habit of using their alkaline developers for darkening after bleaching in intensification, and who have adopted ferrous oxalate, will be interested to know that they may use it for the same purpose, with the precaution, however, that the ferrous oxalate developer is freshly prepared and in good condition, or else the negative may be badly stained. The advantage of this method lies in the fact that after bleaching, the white silver and mercurous chloride image is reduced to metallic silver and mercury, thus approximately doubling the printing-density. So far as is known the image thus obtained is quite stable, and there is no selective action either in the highlights or shadows; moreover, the operation of bleaching and blackening may be repeated as many times as desired, a corresponding increase of strength resulting each time.

First bleach the well washed negative in:

Water	10 ounces
Mercuric chloride	120 grains
Hydrochloric acid	24 minims

Upon complete bleaching wash the negative in two or three changes of water, and then pass it for two or three minutes each through three acid baths:

Water	12 ounces
Hydrochloric acid	1 dram

This prevents the mercury from combining with the gelatine to the detriment of permanency. Then wash fifteen to twenty minutes in running water, and blacken in a ferrous oxalate developer composed of six parts of a saturated solution of potassium oxalate and one part of a saturated solution of ferrous sulphate. Place the blackened negative into a final acid bath like those already mentioned, and then wash thoroughly and dry.

A Method of Reversal

A METHOD to obtain a negative from a negative by direct printing is suggested in a recent issue of *Zeitschrift f. Reproduktionstechnik*. It consists in bathing the unexposed sensitive plate in a three-percent solution of potassium bichromate, drying, exposing to sunlight for four minutes, washing and finally developing with a slow-working developer.

YOU shall be mistaken in art if you look only at your own mind.—*Alfred Stevens.*

XUM

ON THE GROUND-GLASS

WILFRED A. FRENCH

The Connoisseur's Bête Noire

One would think that by this time any intelligent person would instantly reject a portrait of himself in which face and hands are made to appear exactly as white as his shirt-collar. On the contrary, an acquaintance of mine, of New York, sent his sister — as a Christmas gift — his portrait made by one L——k, a local photographer. Face, neck, hands, collar and cuffs were of a uniformly dazzling white, to which atrocious effect the retoucher had contributed his full share.

This photograph is a libel on the craft. I have heard some men say about such portraits of themselves (deprecatingly): "I suppose it can't be helped; it 's the nature of the beast." Such persons do not appear to have an exalted opinion of photography. At least, they show a woeful degree of ignorance on the subject. They are too busy to notice the beautiful specimens of sanely rendered portraits in the show-cases of master-photographers. How are they to be enlightened? Who will undertake this missionary work?

It 's of no use to give the offending photographer a coat of tar and feathers and order him to quit the city, for he is less to blame than his acquiescent patron. In his eagerness to shorten the work, the photographer curtails the exposure and development, and probably says to himself, like the revivalist who placed a counterfeit nickel in the contribution-bag, "Them heathens don't know the difference."

Compensating Disappointments

How many amateurs know the beauty and permanence of a Kallitype, or of a plain salted print? With the temporary disappearance from the American market of several important coal-tar products, such as metol, amateurs have begun to look around for a substitute developer for gaslight-papers. If they search in vain, they may have to resort to daylight-papers, and utilize the rays of the sun, whenever available. This means to get up early in the morning and work before breakfast! Thus we resuscitate the old maxim — now almost forgotten —

"Early to bed, and early to rise,
Makes a man healthy, wealthy and wise."

Therefore the wise man will revive some of the earlier printing-processes, Kallitype, for example, described so well by James S. Escott in April Photo-Era, 1907, and accompanied with superb illustrations.

Eastman's Water-Developing Platinum Paper, a simple, satisfactory medium, with all the characteristics of platinum, developed in warm water and cleared in acidulated H_2O, had quite a vogue about seven years ago. Incidentally, there is the plain salted print, of quiet beauty and indubitable permanence — a sheet of salted Saxe paper floated on a silver bath, printed, toned and fixed in plain hypo.

And to think of the evenings! Instead of passing them at the camera club or in some ill-ventilated closet, turning out prints on gaslight-papers, one may sit in a cosy arm-chair, reading and talking to wifie, helping the children with their lessons, worrying the dog — in fact, getting acquainted with one's own family. A neighboring friend will now feel encouraged to drop in on an evening, and the first thing one knows a game of cards is in progress! Or, if photography is not to be forgotten, what is the matter with bringing out the opaque projector and showing prints or picture-postcards? One can easily borrow a different set from a friend and lend one's own in return. So this so-called metol famine is not the ogre it has been painted. There are worse ones than that. But let us be cheerful.

Osculation ad Libitum

To print a kiss upon her lips
He thought the time was ripe;
But when he went to press, she said:
"I do not like your type."
Boston Transcript.

A kiss he printed on her lips
And showed her no contrition,
Because the artful minx inquired:
"Well, when 's the next edition?"
Birmingham Age-Herald.

A kiss he printed on her lips,
And she made this oration:
"Please, please, continue doing that!
It boosts my circulation!"
New York Evening Sun.

A kiss he printed on her lips,
But father was about;
He did n't like the ardent swain,
And so he led "it" out.
American Press.

A kiss he printed on her lips,
She smiled, the artful creature,
And modestly inquired of him,
"Was that a special feature?"
Moscow (Idaho) Star-Mirror.

He tried to kiss her lips again,
But could n't quite get at her;
She held a book in such a way
They were "next to reading matter."
Boston Courier.

He was no quitter; oh, not he;
So on he pressed, for fair.
The Silver Cup he 'd guarantee,
And won a kiss right there.
Photo-Era.

More Than He Is Worth

Irate Customer (to the proprietor of a photo-supply store) — "This is the second time that your clerk, 'Nobody Home,' has disappointed me. I ordered yesterday morning half a gross of 8 x 10 Cyko, and an 18 x 24 ferrotype plate. He said that both were in stock, and promised to send them before 5 P.M. yesterday. Neither goods not any explanation had come by to-day noon, so I called to see about it. He said he found the paper, but only a 10 x 14 plate, which he thought might not be large enough, so he did nothing further about the matter. Why did n't he telephone me? The telephone is right near his elbow."

Proprietor (soothingly) — "I am sorry, Mr. R. You see he gets only five dollars a week."

EVENTS OF THE MONTH

Announcements and Reports of Club and Association Meetings, Exhibitions and Conventions are solicited for publication

Death of Vero C. Driffield

In the death of Mr. Vero C. Driffield, November 14, at Widnes, in his sixty-eighth year, photography has lost one of its most ardent and eminent investigators. Born in 1848, he began the practice of photography as early as 1863, and finally spent six months in the studios of Henry Sampson in Southport. This was just prior to the commencement of his apprenticeship in mechanical engineering, which began in 1865. In 1871 he went to Messrs. Gaskell, Deacon & Co., alkali manufacturers, as engineer, later becoming manager of their Gaskell Deacon Works, on the organization of the United Alkali Co., Ltd.

In 1871, also, he first made the acquaintance of the late Dr. Hurter, which soon ripened into a firm friendship, due no doubt to the similarity of their tastes. Dr. Hurter first took a practical interest in photography in 1876, and their chemical investigations were soon begun. Their first paper was published in *The Journal of the Society of Chemical Industry*, in 1890, and their last collaborated paper appeared in the *Photographic Journal*, in 1898.

So revolutionary in character were the conclusions reached that even to-day the discussion has not altogether ceased, although the new principles have been accepted by progressive photographers in all countries, and by many plate-manufacturers, who have adopted the H. and D. speed-markings. Of course it is now realized that the dissentions were due very largely to misconceptions resulting from the loose use of technical terms in the earlier investigations of these men; but to Hurter and Driffield must be accorded the honor of first establishing the method of sensitometric measurement, which has contributed so much to the manufacture of dryplates on a scientific basis.

Von Hübl Decorated

Freiherrn von Hübl, a well-known Austrian photographic investigator and writer, has recently received, in recognition of important services during the past year, the *Ritterkreuz* of the Order of Leopold, with war-decoration.

The Federal Photographic Society

Last spring the camera-users of the government departments at Washington, D. C., organized for social purposes, and primarily for advancement in scientific photography. The movement is an important one, and once the society gets on its feet there is promise that something of the work of the Royal Photographic Society in England may be accomplished in America. Meetings are held on the second Friday of each month and occasional public lectures are given.

The officers of the society are: Prof. T. W. Smillie, Smithsonian Institution, Honorary President; Dr. L. H. Beeson, Agricultural Department, President; H. T. Cowling, Interior Department, Vice-president; A. A. Ruark, Agricultural Department, Treasurer; E. L. Crandall, Agricultural Department, Corresponding Secretary; F. B. Kaye, Navy Department, Secretary.

Notable Talks on Color-Photography

The annual meeting of the American Institute of Graphic Arts was held the evening of December 14 at the National Arts Club, New York. President Oswald presided. Five members of the board of directors were elected, as follows: Arthur W. Dow, Arthur S. Allen, F. A. Ringler, Edward B. Edwards, Ray Greenleaf.

Treasurer Willing introduced the noted art photographer, Dr. Arnold Genthe, who exhibited results of his experiments with color-photography, and in an interesting manner told of the satisfactory and unsatisfactory features of the processes now available.

The exhibits of the Autochrome-process were wonderful records of apparently all the colors of nature. The lecturer explained the process in detail.

Dr. Nathan T. Beers then showed what had been accomplished with color-photography in the surgical field. The process used by him was Kodachrome, a two-exposure method originated and to be marketed by the Eastman Company. The exhibits of Dr. Beers were Kodachromes at their best, for the doctor is an acknowledged master of this process. By the Kodachrome process two dryplate-negatives are made from the same object, immediately after each other. One negative is made through a green filter and the other through a red one. These negatives are then reversed into dye-positives, one being stained green and the other red and superimposed. When viewed by transmitted light they appear to record all the colors of nature, though naturally the blues and violets are lacking.

A New Ansco Office-Building

Land has recently been purchased in Binghamton, N. Y., for the new offices of the Ansco Company. It is expected that a $100,000 building of handsome appearance will be erected.

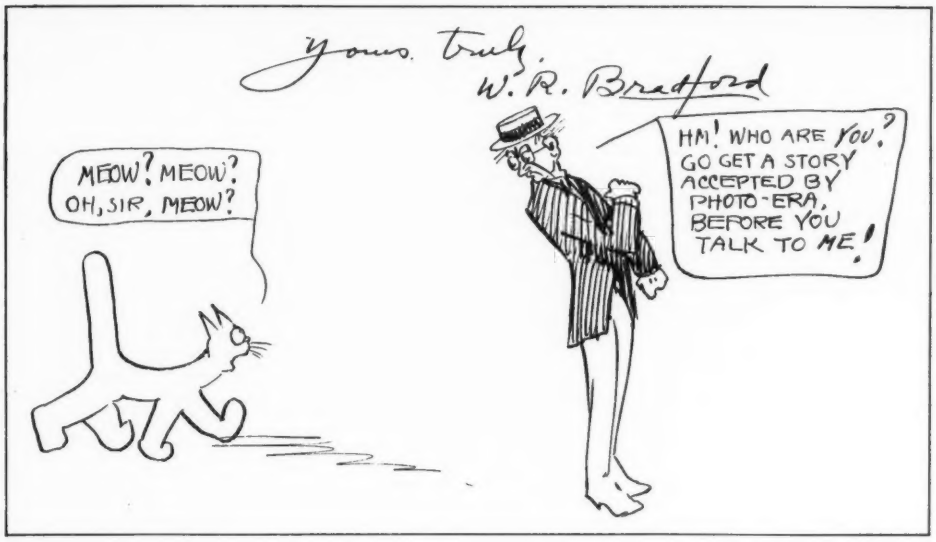
The Big 1916 Conventions

The date of the next annual convention of the P. A. of A., to be held at Cleveland, Ohio, will be decided definitely at a meeting of the Executive Board in January, but it will probably be July 10, because of the Shriners' and Rotarian conventions in the following weeks. The National Dealers' Convention, also to be held in Cleveland, will occur the week of March 6.

A Metol Substitute Invented

Dr. Charles J. Thatcher, a chemical expert of New York City, has taken out a patent for a new photographic developer having substantially the same composition as metol, of which there is a serious shortage in America, due to the war. If the new reducer, which has been named Kathol, fulfils the claims made for it, and can be manufactured successfully on a commercial basis, it will surely be welcomed, for American manufacturers so far have been unable to produce metol. Dr. Thatcher is a graduate of the University of Leipsic, and has made an extensive study of the manufacture and properties of the various developers.

XUM



AN IMPLIED COMPLIMENT

W. R. Bradford — Humorist

W. R. Bradford, who sailed before the mast for some time, and is now chief cartoonist of *The North American*, Philadelphia, has become better known to Photo-Era readers through his success as a participant in the "Interiors with Figures" competition, which he celebrated in unique fashion by a humorous sketch. (See picture and sketch in the July issue, 1915.) This was succeeded by several cartoons depicting the humorous side of photography.

Mr. Bradford's chief contribution to the pages of Photo-Era, however, is his article on panchromatic photography by gaslight (see the December issue, 1915), in which he revealed himself as a practitioner and writer of the first rank.

The camera, however, is his hobby, the humorist's pen and pencil being the means by which he "manages to feed and clothe the kiddies, and buy himself an occasional necktie." By the accompanying sketch our genial artist celebrated the news that the above-mentioned article had been accepted. A humorous illustrated story of photographic interest from his gifted brain will soon appear in Photo-Era.

The President Foils the Camera-Men

People of refined sensibilities throughout the country were indignant when they learned that President Wilson and his wife, who were spending their honeymoon at Hot Springs, Va., were being annoyed by photographers determined to snapshoot them.

The small army of motion-picture men and press-photographers was so persistent in its efforts to get pictures of the distinguished couple that the secret-service men were ordered to break every camera directed at him or his bride. One resourceful photographer provided himself with a powerful telephoto-equipment, enabling him to photograph persons a block away; but even he was able to get only a greatly blurred picture that purports to be the President and Mrs. Wilson closely followed by a secret-service man. The likenesses are utterly unrecognizable, and it is suggested that the scene was staged by a desperate and enterprising camera-man, and the production palmed off as a genuine though not entirely successful picture of the President and his bride. This appears to have been the net result of the photographic highwaymen's activity in intruding on the privacy of the President's wedding-journey.

Restrictions Upon the Traffic in Optical Instruments

An order has recently been issued by the Minister of Munitions which is of the utmost importance to all persons buying or selling certain kinds of optical instruments or dealing in them in any way throughout Great Britain. All such transactions are now prohibited without an express official permit given by the Director-General of Munitions Supply. This new interpretation of the Defense of the Realm Act includes the following instruments:

Prismatic binoculars and monoculars having a magnifying-power of five times or over.

Galilean binoculars having object-glasses with a full diameter of one and three-quarters inches or more, and a magnifying-power of three and one-half to five times.

Terrestrial telescopes, portable, with an object-glass of one and one-quarter inches full diameter or more, and a magnifying-power of eleven times or more.

Telescopic or other sights for rifles.

Periscopes and hyposcopes, using optical means other than, or in addition to, plane mirrors.

Compasses, prismatic and the like, of an outer diameter of two and one-half inches or less, by means of which an azimuth angle can be read off simultaneously with the sighting of an object.

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LONDON LETTER

CARINE AND WILL A. CADBY

It is a sign of the times that whenever one discusses photography with those interested in the trade-side of it, the conversation always and inevitably comes around to armament-making. It can hardly be otherwise; for our leading camera and photographic materials manufacturers are all turning out war-munitions instead of their usual goods. A few days back we visited a London factory that is noted the world over for the exactness and beautiful finish of its cameras, lens-shutters and other accessories. We were told the plant had been doubled and was now devoted entirely to producing parts of the delicate mechanism of explosive shells, for which work it was admirably fitted. We also heard that at the beginning of the war there was a big and sudden demand for hand-cameras; but this business terminated as abruptly as it began when the War Office issued instructions that no photographic apparatus was to be taken to the front. Another firm — one of the largest in this country — undertook, almost as a favor, some slight dark-slide (plateholder) repairs we needed, and explained that war-work was keeping them going at high pressure. Even the photographic paper-makers are pressed into the service, and we have heard of important works of this description which usually produce an artistic printing-medium being entirely taken up with government-necessities.

This state of things is naturally inclined to increase the upward tendency in the price of photographic materials, and so it behooves us to be more careful in our expenditure on photography. One way to achieve economy is to work with a smaller-sized plate than we are usually accustomed to; and, incidentally, we have found from personal experience that this leads to greater efficiency in several respects and a much-reduced plate, paper and chemical bill.

As well as photographic factories, use is being made of every empty building or house for hospital supply-depots; even our photographic studio has been made into a branch of this work. We should not be British if we did not deprecate ourselves and talk of the wonderful organization of the enemy; but in reality not much of our material or human energy is wasted.

The Pictorial Photographers of Scandinavia is the name of the present exhibition at the Little Gallery. The best, or rather one of the best things shown, is a study of the nude by John Hertzberg, of Sweden. The nude is always a difficult problem when attempted by photography, but this rendering of it is most happy. It is just ideal and just realistic enough, and does not "beg the question" by an accommodatingly obscure lighting. In treatment it resembles a clever red-chalk sketch. There are 54 exhibits at this show, but 39 of them are Swedish, while Norway and Denmark account for only 15.

The Norwegian exhibitor known best over here is Herr Wilse, whose photographs of the Norwegian mountains and ski-ing-fields are often reproduced in our illustrated press. We heard a great deal about him when we were in Finse several years ago, and were unlucky enough just to miss meeting him. We were very fascinated with the huge rotary snow-plow which keeps the line open in the winter between Christiania and Bergen, and were very eager to get a snapshot of this monster in motion, believing that it held pictorial possibilities. We were advised, however, to content ourselves with a placid portrait of it at rest in a station; and then, to convince us of the foolishness of our scheme, the clinching argument was added, "Herr Wilse says so!"

After this one of us paid dearly for his obstinacy in attempting a snapshot at close quarters by being literally buried in the great mass of snow which this enormous monster throws up — sometimes sixty feet high — with its great flails. However, in spite of this snow-burial the camera was not injured, and the little film was safe and has been one of our most valuable photographs.

But this is not the Scandinavian exhibition. There are several portraits which are good and sincere work. One of the best is, perhaps, "Fridjof Nansen," by Ernest Rude (Norway). It gives one the impression that the photographer had great sympathy with his sitter.

"The Bathers," by Henry Goodwin (Sweden), is a strange and original bathing-scene. It might almost be in a dream. The figures are small and insignificant, the rocks have an eerie aspect and the sea looks as if a stout heart would be needed to face its dangers.

The Snapshot-from-Home League is still continuing its activities and gaining new members, particularly in the north of England. The organizers gave an entertainment, last month, which was very successful and almost too well attended — at least, that was our impression, because, arriving a few minutes after the time it was scheduled to begin, we found ourselves shut out

A BRANCH OF A HOSPITAL SUPPLY-DEPOT IN THE CADBY STUDIO

with a crowd of other slightly unpunctual people. The fact was that the hall at the Young Men's Christian Association, where it was held, was already filled even before three o'clock. Mr. A. L. Coburn, who is an enthusiastic helper, was lecturing in his natural and amusing manner and showing some of his snapshots on the screen.

The next activity of the League is to be an exhibition in the near future, and enlargements of some of the best snapshots are already being made.

Airmen are becoming increasingly skilful at photography, as can be noticed by the results published in the press. A picture that has caused some sensation, reproduced in *The Daily Chronicle* recently, was taken from a Russian aeroplane, and shows how the Germans utilize the poisonous gas. Even in the reproduction from the halftone-block the great clouds of fumes and the men releasing them can be clearly seen, and behind there are three rows of infantry waiting to follow up the attack. The airman was lucky in his light, as the sun was shining, and the long shadow of each man greatly helps the effect.

We have to chronicle the death of the Court photographer. To Americans this may not sound an important event, but in this country Mr. John Russell (who was only eighteen when he first photographed the late King Edward) was quite an institution, and the firm of J. Russell and Sons, of Baker Street, which he founded, is known all over England. Mr. Russell photographed nearly all the sovereigns of Europe and their consorts. An incident which nearly got him into trouble occurred at a royal function in Germany, when an enterprising pressman, without revealing his occupation, got himself appointed the photographer's assistant. The subsequent disclosures in a Paris newspaper, in the words of one of the Kaiser's own officers, "made the Emperor absolutely furious."

An Accomplished American Lecturer

ELSEWHERE in this issue reference has been made to an amateur photographer and nature-lover who used to spend his summer-vacations in the American National Parks, photographing their scenic beauties with uncommon skill. By profession a court stenographer, he devoted his evenings to lecturing with lantern-slides — colored exquisitely by his wife — his subjects being the National Parks and their flora. Each year he extended his visits to include the Rocky Mountains and the Canadian Rockies. With his growing success in the lecture-field he abandoned his profession as a stenographic recorder and devoted himself entirely to lecturing. The camerist's name is Herbert W. Gleason, of Boston, U. S. A., whose reputation as a naturalist, explorer, photographer and lecturer is second to none. His *repertoire* consists of thirty-three lectures on different topics, including the life and work of John Muir; Luther Burbank, the Horticulturist; Thoreau's Country; Our Great National Parks; The National Parks of Canada; Scenic Alaska; Picturesque California; The Old Spanish Missions; Grand Canyon of the Colorado; Ancient Cliff-Dwellers of the Southwest; The Canadian Alps; Rambles in Birdland; Alpine Flowers of the Rocky Mountains; Trees and Wild Flowers of California and New England; Mushrooms and other Fungi.

Numerous and extensive lecture-engagements have taken Mr. Gleason to the principal cities in the United States and Canada, including San Francisco (at the Exposition, September last, two lectures a day) and Carnegie Institute, Pittsburgh, Pa., at which latter place he will be heard again next March. He is due also at Washington, D. C., in April, Chicago in April, Minneapolis in May, and other places in the Northwest. Those who are interested to hear accurate descriptions of America's wonderlands embellished with lantern-slides that are marvels of the camerist's and the colorist's art, are urged to attend Mr. Gleason's lectures. On no account miss them!

Remembered by Our Friends

THE opportunities to manifest our feelings of cheer, sympathy and good will toward one another were never more profoundly appreciated than during December, 1915. Stimulated, no doubt, by thoughts of the vast and deepest of sorrow caused by the most barbarous war that ever disgraced civilization, the makers of Christmas-cards and New Year greetings surpassed themselves in the tasteful and varied beauty of the designs, and the nobility and breadth of the sentiment which the messages conveyed.

The consumption of these artistically prepared expressions of love and encouragement is reported to have been enormous, and it is well that this was so. The fact speaks volumes for the gracious and humane sentiment of the American people, which it were idle to wish eradicated.

PHOTO-ERA was the recipient of felicitations and good wishes from all parts of the United States and its Territories — from subscribers, contributors, readers and dealers alike. To one and all we extend, herewith, our heartiest good wishes — together with the hope for health and prosperity and a minimum of disappointments — for the year 1916!

Major-General Albert Edler von Obermayer

THROUGH the death of Major-General Albert Edler von Obermayer, which occurred September 27, 1915, the Photographic Society of Vienna has lost a member who has received high and well-merited recognition for achievements in various departments of science.

Besides being an accomplished photographer and a pictorialist of note, Albert Edler von Obermayer contributed theoretical and practical articles to "Eder's Year Book of Photography," *Photographische Korrespondenz*, "Urania" and other notable publications. For twenty years he was a member of the Royal Imperial Photographic Society, its vice-president since 1905 and active in its interests until his death.

Among the articles on photography which he has written are, "Films in Commerce," "Petzval's Inventions in the Realm of Photography," "Color-Photography According to the Warner-Powrie Method," "Photography with Invisible Rays" and "Photography of the Northern Lights."

General von Obermayer has rendered permanent services to the Photographic Society of Vienna by his lectures, publications and indefatigable activity, and his loss is deeply mourned not only in Austria but in other countries where his writings have been read and appreciated.

Snowden Ward Memorial Fund

THIS fund, commemorating the late Mr. Snowden Ward, and to which several American workers have contributed through PHOTO-ERA, is now available to help any needy photographer who is an in- or outpatient of the London Hospital in Whitechapel with food, rent, surgical appliances or in other ways for which the ordinary funds of the hospital are not available. The capital fund amounts to about $900, the income from which only will be used.

XUM

BOOK-REVIEWS

Books reviewed in this magazine, or any others our readers may desire, will be furnished by us at the lowest market-prices. Send for our list of approved books.

INVENTIONS AND PATENTS. By Philip E. Edelman. Octavo, 288 pages, illustrated. Price, cloth, $1.50 net. New York: D. Van Nostrand Company.

This volume, which describes in detail the workings of the patent system, would seem to be assured of a warm welcome, for it explains to inventors, investors and manufacturers, many of whom have failed to understand how to use it, the simplicity and comprehensive value of the system as a means to avoid the expenditure of time and money on unpatentable ideas, patented valueless inventions, worthless patents and otherwise ill-chosen and unwise attempts to benefit under the patent laws. There are also important chapters on protecting an invention; points of patent procedure; disposing of patent rights; infringements; foreign patents, etc.

HOW TO CHOOSE AND USE A LENS. Edited by F. R. Fraprie, S.M., F.R.P.S. 12 mo. 83 pp. Paper, 25 cents; cloth, 50 cents. Boston, U. S. A.: American Photo-Publishing Co.

This is No. 3 of "Practical Photography," and consists of well-known facts about lenses that have been assembled with discrimination by the editor. They have been published from time to time in authoritative text-books, lens-catalogs and the photographic press. They are intended to instruct, and explain pitfalls to be avoided by amateurs when photographing under various and difficult conditions, particularly to preserve the natural perspective and proportions of objects, animate or inanimate. A table of hyperfocal distances, from 2 to 24 inches, is a specially interesting feature of this practical little volume.

A Fable

A DUCK which had laid several dozen large eggs complained that she received no recognition for this achievement.

"That hen over there," she complained, "who has not laid as many and as large eggs as I have, is praised in books and poetry; whereas I am not even mentioned."

"The trouble is," explained a cockerel who had listened to her, "that you do not give publicity to what you have done. You lay an egg, and then you waddle quietly away without speaking of it. The hen, on the other hand, lays no egg without making a great noise about it, so that the whole neighborhood is informed of the event."

This fable should be remembered by those who do not advertise.—*Die Photographische Industrie.*

Identification of School-Children

CLASS-PHOTOGRAPHS have long been made in the public schools, and now individual portraits are coming into a new significance in large cities where children of every character and condition must be contended with. The problem is an especially complex one in New York, where it has recently been decided to photograph all school-children for identification, a course having many obvious advantages to child, parents and society.

Unfortunately, this entire matter has been placed in the hands of a Philadelphia concern willing to do the work gratis so far as the City of New York is concerned, the scheme being to sell prints to the pupils through their teachers, and thereby not only cover the expense of the work for the Department of Education, but net a handsome profit besides, even though the prices charged are very low.

PHOTO-ERA believes that in this matter our great metropolis, which enjoys virtual commission-government, and should stand as a model for other municipalities, has taken a deplorable course. First of all, it is right and proper that the city pay for all legitimate services rendered; indeed, it should not be otherwise. If the expense seems too great, the city should assume the sale of prints to pupils, and take all profits above the cost of production. This would at least cover the expense of the photographic identification, and probably pay a profit besides, which would not prove unwelcome during the present highly indebted condition of the city. Second, the city should aim in every department to patronize home-industry whenever compatible with due economy, and in this instance it is difficult to believe that New York photographers could not compete successfully with those of any other city. Certainly, this arrangement appears to have robbed them of a considerable amount of business which is rightfully theirs. Third, it is unjust that so large an order, covering so wide a territory as is embraced by Greater New York, should fall into the hands of a single firm. New York consists of five boroughs, having an average population of over a million inhabitants each, and a spirit of fairness would indicate a school-photographer resident in each borough, all working, of course, according to uniform specifications laid down by the Department of Education.

This situation, which is likely to be duplicated elsewhere, indicates clearly that it behooves the photographers of every city to see to it that their talents and facilities are given due consideration in awarding contracts. Indeed, it is reported that the Philadelphia firm now in control of the New York work has already photographed the school-children of Boston, Fall River, Lowell, Cambridge, Hartford, Pittsburgh, Milwaukee, Easton, Pa., Trenton, N. J., and about twenty-five other cities. Let no photographer desirous to do this work in his home-city be lacking in initiative.

The Largest Telescope in the World

IT is reported by the daily press that the largest telescope in the world is about to be erected in the observatory recently established by the Canadian government near Victoria, B. C. The instrument is the work of Dr. John A. Brashear, president of the American Society of Mechanical Engineers, and builder of the great forty-inch Yerkes telescope, the thirty-six-inch Lick telescope and the twenty-six-inch telescope of the United States Naval Observatory.

The Canadian telescope recently completed by Dr. Brashear has a lens six feet in diameter. Instrument and dome weigh sixty tons; the tube, thirty feet long and more than six feet in diameter, alone weighs twelve tons. The principal speculum or mirror is a disc of glass seventy-three inches in diameter, weighing over two tons. A powerful driving-clock will regulate the movements of the gigantic instrument. The total cost is estimated at approximately $300,000.

XUM

WITH THE TRADE

Verascopes and Taxiphotes

OUR correspondence, numerous queries and requests for magazine-articles on the subject indicate conclusively that interest in stereoscopic photography is on the increase, particularly with miniature cameras. The fascination of the work and its economy, due to the small size, cannot be denied. Those of our readers who contemplate investing in apparatus of this sort should not fail to send to R. J. Fitzsimons, 75 Fifth Avenue, New York, for the latest catalog of Verascopes and Taxiphotes manufactured by Jules Richard, Paris. These instruments are of the best, and elicit the highest praise wherever shown. The Verascope, of course, is the stereoscopic camera; the Taxiphote, a wonderful stereoscope or viewing-device which raises the desired plate from a grooved box, places it opposite the eyepieces and then replaces it in the box again without changing its order.

The Mercury-Vapor Lamp in Aerial Telephony

THE Cooper Hewitt lamp has other uses than illumination. It has had much to do with the development of aerial telephony, the latest world-wonder. A lamp is used at both ends of the wireless "circuit," on the transmitter and on the receiver. The arc acts much the same as an amplifier does to the ordinary telephone wire. The weak impulses received are intensified, so to speak, until they become even stronger than when they originated.

Imp Flashlite-Gun a Success

THE simplicity, efficiency and reliability of this clever device have "caught on." The Imperial Brass Mfg. Co. advises us that the publicity being given this flash-apparatus for amateurs is bringing generous returns, and that the purchasers are meeting with the utmost success with its use. Specimen pictures are being obtained from purchasers, and reproduced on slips of coated paper, together with a testimonial from the author. Certainly this is pleasing and convincing advertising.

Deceiving the Trusting Public

WITH regard to the decision of the U. S. Supreme Court, after ten years of legislation and litigation, that the statute excluding from interstate commerce false statements of curative effects of drugs is constitutional, Justice Hughes says:

"We find no ground for saying that Congress may not condemn interstate transportation of swindling preparations accompanied by false and fraudulent statements as well as lottery-tickets."

Justice Hughes may have an opportunity to express a similar opinion regarding a new type of camera made and sold in this country by a firm which asserts that, in the hands of any amateur, pleasing results may be produced. As a matter of fact, this type of camera is practical *only* in the hands of its inventor, and hence dealers throughout the country do not wish to carry it. Any apparatus or specialty which the dealer cannot guarantee had better be let alone.

Letter Declining an Advertisement

ALTHOUGH it is not necessary, nor tactful, to publish the names of the concerns whose advertisements PHOTO-ERA declines to accept, from time to time, it may interest many to read a specimen letter, in which the Publisher gives his reasons for such action.

BOSTON, MASS., Jan. 11, 1916.

Dear Sir:

We thank you for submitting to us one of the colored photographic prints according to the advertisement you desire to insert in PHOTO-ERA. While not objecting to the form of your advertisement — offering to give *free* one 8 x 10 enlargement from a negative sent you by the customer, provided he let you color it, your price being one dollar — we are free to say that the coloring, according to your sample print, is very inferior, and, moreover, scarcely worth the price. Besides, the print was not trimmed carefully before being mounted, as the building is considerably out of plumb. If you submit a print of such a character to the publisher of a critical journal, you are very likely to be as careless, if not more so, to a customer.

For these reasons we regret to be unable to accept your advertisement. We return to you the print exactly as received by us, considerably damaged in transmission by mail, because carelessly done up.

Thanking you for submitting the print in reply to our request, we remain, Yours truly,

PHOTO-ERA MAGAZINE.

A Hint to Dealers

WHILE many a photo-supply dealer racks his brains how to increase his business, he often forgets that, years ago, certain methods were practised that produced good results and are well worthy to be tried again. Of course, there are so many new attractions, nowadays — the theaters, the "movies," free lectures, etc., that the dealer must first study the character of his community before he embarks on a plan of publicity.

That the general public is interested in pictures needs no argument. Here is an opportunity that the wide-awake dealer should embrace without delay. It should be easy for him to assemble several collections of highly meritorious prints by noted amateurs, one-man shows, if he prefers, which, if properly advertised, should fill up his store during the day-time.

For an evening-entertainment, he can install a series of autochromes or Paget transparencies displayed by means of an effective system of artificial lighting. Or, a timely talk on any of the live and engrossing subjects of the day, illustrated by beautiful lantern-slides or by motion-pictures, using for the latter one of the several types designed for home-use, which he can probably obtain free from the agency on account of advertising. He will probably be able to get the assistance in these publicity-shows of amateurs eager to acquire the experience. Naturally, the dealer will forestall attempts to reduce his stock of photographic goods by illegitimate means (the light-fingered gentry), and, for the time being, conceal his sign, "Take a Kodak with you," or add the words "that you have bought."

Other similar attractions will suggest themselves to the resourceful purveyor of photographic materials.